SCHOOL OF PUBLIC HEALTH COLLEGE OF HEALTH SCIENCES

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QUALITY OF LIFE OF PATIENTS WITH LOW VISION ATTENDING KORLE-BU AND EASTERN REGIONAL HOSPITALS

BY

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DECLARATION

I, El-Frida Adwoa Serwaa Pambo, declare that except for the other people's investigation which have been duly acknowledged, this work is the result of my own original research, and that this dissertation, either in whole or in part has not been presented elsewhere for another degree.

Signed……

EL-FRIDA ADWOA SERWAA PAMBO

July, 2013

Signed…….

DR PATRICIA AKWEONGO (Supervisor)

July, 2013

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ABSTRACT

According to the World Health Organization report in 2012, 285 million people are visually impaired worldwide. Of these people, 39 million are blind and 246 have low vision. Ninety percent of these visually impaired live in developing countries. In Ghana the prevalence is reported to be 2%.

Visual impairment is reported to cause a limitation in performing usual duties of the individual. Visual impairment hampers normal activities such as eating, writing, dressing, travelling from place to place and interacting with others. Although low vision caused by some disease complications like glaucoma and cataract can be avoided, insufficient education and unavailability of low vision services in all health facilities lead to long waiting periods resulting in complications.

The purpose of the study was to describe the causes of low vision, to document the intervention devices given to low vision patients and to assess the quality of life of low vision patients.

A cross sectional study assessed the quality of life of low vision patients attending Korle Bu and Eastern regional Hospitals. The 25-item National Eye Institute Visual Function Questionnaires (NEI VFQ-25) was administered using telephone interviews to 101 patients who visited the two clinics within the previous one to two years.

The independent variables the study measured were age, occupation, monthly income, marital status, level of education and duration of vision loss.

The causes of low vision were mainly posterior segment diseases with glaucoma being the major cause (23%). Most low vision patients received interventions such as telescopes and magnifiers which assisted them in reading and distance spotting and spectacles were for mobility.

The NEI VFQ-25 subscale scores with the greatest deficit were near activities (mean score 46.9), distance activities (mean score 45.62), mental health (mean score 43.01), Role difficulty (mean score 40.97), dependency (mean score 44.97) and peripheral vision (mean score 47.03).

The NEI-VFQ demonstrated that low vision patients perceive marked impairment of functional status and quality of life.

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LIST OF ACRONYMS

ARMD	Age Related Macular Degeneration
ARM	Age Related Maculopathy
BCVA	Best Corrected Visual Acuity
CCTV	Closed Circuit Television
FLV	Functional Low Vision
HR QOL	Health Related Quality of Life
25-NEI-VFQ	25-item National Eye Institute Visual Function Questionnaire
QOL	Quality of Life
RP	Retinitis Pigmentosa
SF-12	12-item Short Form
VA	Visual Acuity
VF-14	Visual Function 14
WHO	World Health Organization
LVD	Low Vision Devices

CHAPTER ONE

1. INTRODUCTION

1.1 Background

A person with low vision according to World Health Organization is one who has impairment of visual functioning even after: treatment, for example an operation and/or standard refractive correction (has been given glasses or lenses) and has a visual acuity of less than 6/18 to light perception, or a visual field of less than 10° from the point of fixation (i.e. 20° across) but who uses, or is potentially able to use, vision for the planning and/or execution of a task. It is often a loss of sharpness or acuity but may present as a loss of field of vision, light sensitivity, distorted vision or loss of contrast. Low vision often may occur as a result of birth defects, injury, and the aging process or as a complication of disease.

Globally according to WHO (2012), more than 285 million are visually impaired, of whom 246 million people have low vision and 39 million blind. However, uncorrected refractive errors (43%) are the major cause of visual impairment followed by cataract (33%) and glaucoma (2%).

Glaucoma and age-related macular degeneration are reported as the leading causes of blindness in the world respectively while uncorrected refractive errors are the main cause of moderate to severe visual impairment. A population-based survey reported prevalence of 1.7% major blinding disorder in the Wenchi district in central Ghana among those 30 years and older and 2% prevalence of low vision (Moll et al., 1994).

Sight loss can lead to depression, loneliness and anxiety. It is a risk factor for restriction in an older person's ability to carry out everyday activities. One of the most difficult aspects of vision loss is the mental and emotional turmoil people go through

when they find out that they will lose their sight. This is particularly true in the case of dry AMD (Age related Macular Degeneration) where currently no medical treatment options exist (AMD Alliance International). In the case of wet AMD the change from healthy vision to severe visual impairment leaves the visually impaired person little time to adjust. As a result periods of severe depression are common, often worsened by the sleep deprivation that tends to accompany vision loss. These factors may affect visually impaired people, their friends and families who may be unprepared thus affecting their quality of life.

The purpose of this study was to assess the quality of life of low vision patients. The study was conducted at the Korle Bu Teaching Hospital and The Eastern Regional Hospital low vision clinics.

1.2 Problem Statement

Low vision is a problem in Ghana with a prevalence of 2% as reported by Moll et al. in 1994. Two clinics have been dedicated to providing low vision services. There has however not been any study to assess the quality of life of low vision patients and the interventions available to improve vision.

Visual impairment is reported to cause a limitation in performing usual duties of the individual. Visual impairment hampers normal activities such as eating, writing, dressing, travelling from place to place and interacting with others. Studies of quality of life of persons with low vision report that visual impairment is significantly associated with functional status, decreased quality of life and increased emotional distress (Stelmack et al., 2008). Birth defect, injury and disease complication which are the causes of low vision affect individuals of all age groups. Productivity is

generally affected for the working age group. Individuals in such situations may get depressed and become dissatisfied with their lives.

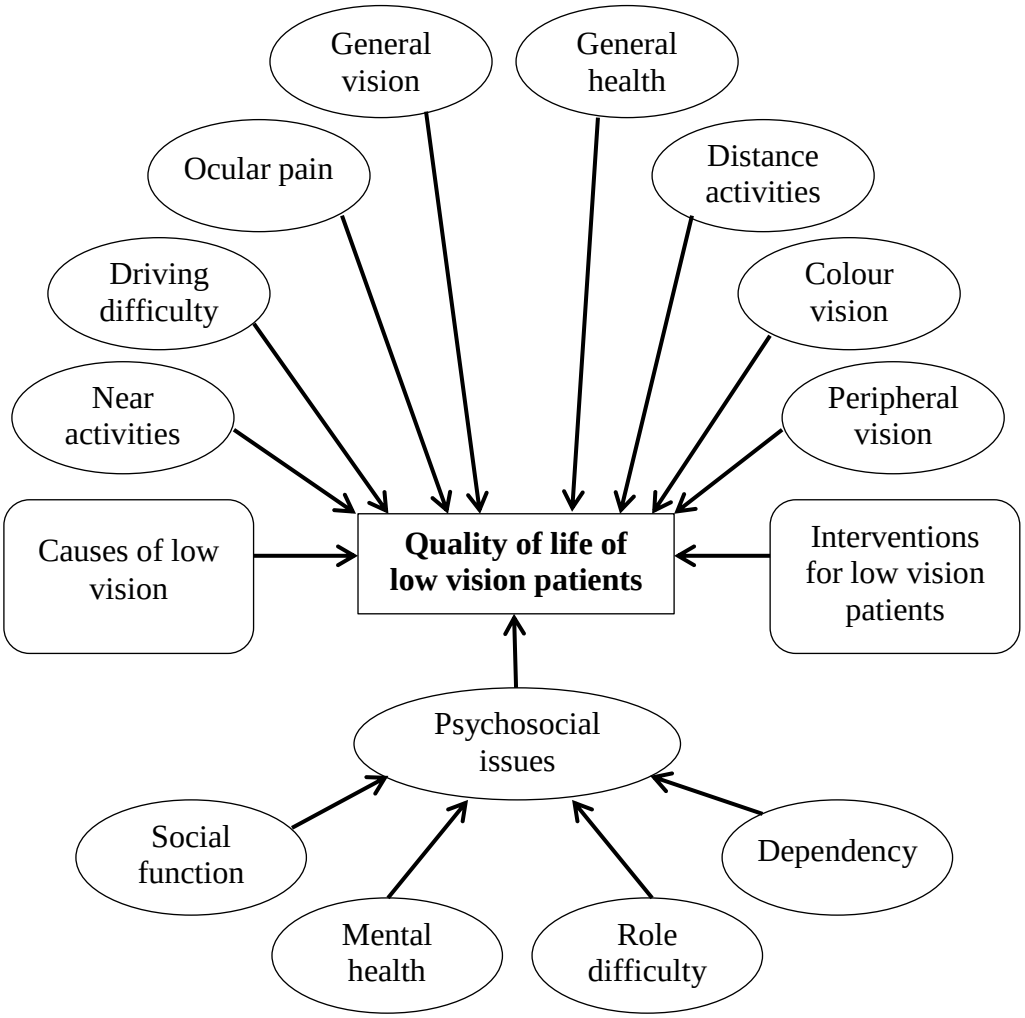
Although low vision caused by some disease complications like glaucoma and cataract can be avoided, lack of education and unavailability of low vision services in many health facilities lead to long waiting periods resulting in complications. This may affect productivity as well as the socioeconomic status of the individual, family and nation at large. This study sought to assess the quality of life of patients with low vision and describe the causes and interventions for low vision in the Korle-Bu and Eastern regional hospitals which are dedicated to providing low vision services.

1.3 Conceptual framework: Quality of life of low vision patients

The conceptual framework (Figure 1), first of all looks at the factors affecting quality of life of low vision patients. These are near activities, distance activities, general health, general vision, ocular pain, colour vision, peripheral vision, driving difficulty and psychosocial issues (social function, mental health, role difficulty and dependency). Low vision causes a limitation of the visual role of the individual such as difficulty in performing both distance and near visual activities and this also affects the individual's quality of life. Mental health of the individual is also normally affected and this may lead to depression and emotional instability thus affecting the quality of life of the individual. The daily functioning of the individual is also reduced as a result of low vision. The low vision patient may then tend to depend on others for support and may also not be able to perform their usual roles. Most low vision patients may lose their jobs as a result of their reduced vision. A low vision patient may seek low vision interventions to improve the quality of the person's life. Some of these low intervention devices may be telescopes, hand held magnifiers, closed circuit television, large font size reading materials etc. The individual may be able to perform

some activities of daily living after receiving the appropriate intervention. Low vision may also be caused by birth defects, injuries or disease complication and this may also affect the quality of life of the low vision patient.

Figure 1: Conceptual framework



1.4 Justification of the Study

Low vision may affect the quality of life and may lead to productivity losses. The findings of this study may show the extent to which low vision affect quality of life. It may also highlight if the current visual aids provided as interventions in low vision facilities meet the needs of the low vision persons. The kind of interventions given to low vision patients may enable government/policy makers and donor agencies address

the needs of patients better. Documenting the cause of low vision may provide information for understanding the scope of vision health in Ghana to aid direction of future health planning and cost-utilization that is needed for implementing prevention programs at the population level.

1.5 Research Questions

- What are the causes of low vision among patients?
- What kinds of low vision interventions are provided for patients reporting to the two low vision clinics?
- To what extent does low vision affect the quality of life of patients?

1.6 Objectives of Study

Main objective

To assess the quality of life of low vision patients reporting to Korle-Bu and Eastern regional hospital low vision clinics in Ghana.

Specific objectives are

1. To describe the causes of low vision among patients reporting to the two low vision clinics
2. To describe and assess interventions for low vision
3. To assess the quality of life of low vision patients reporting to the low vision clinics

CHAPTER TWO

2 LITERATURE REVIEW

2.1 Prevalence and causes of low vision

There have been researches on prevalence and causes of blindness and low vision in humans worldwide over the years. Globally according to WHO in 2012 there are 285 million people worldwide who are visually impaired. The main causes of blindness and low vision are considered to be cataract and trachoma (Ngondi et al., 2006, Melese et al., 2003). It was estimated in 2005 in Mankien Payam that 1,154 persons aged 5 years and above were blind and 2,291 persons had low vision (Ngondi et al., 2006). In Southern Sudan prevalence of blindness is reported as 4.1% and a 7.7% prevalence of low vision whereas prevalence of monocular visual impairment was 4.4% in 2005 (Ngondi et al., 2006). This findings show an urgent need to implement comprehensive blindness prevention programs and to address low vision. A study in Indonesia in 2003 showed 5.8% of bilateral low vision in adults 21 years and older in a rural setting. The cause of bilateral low vision was attributed to cataract, uncorrected refractive error and amblyopia which were directly proportional to an increase in age (Saw et al., 2003).

In the Middle East, Tehran Province of Iran, (Soori et al., 2006 in 2006) found the prevalence of blindness (1.09%) and low vision (4.04%) to be similar to other developing countries. In the Wenchi Eye study in Ghana in 1991, the prevalence of blindness was 1.7% whiles that of low vision was 2% (Moll et al., 1994).

2.2 Causes of low vision

Low vision often may occur as a result of birth defects, injury, and aging process or as a complication of disease. Low vision can result from specific eye conditions, such as cataracts, macular degeneration, glaucoma, and diabetic retinopathy, or from a stroke.

The study by Soori et al (2006) showed the causes of low vision in the Tehran Province as cataract and amblyopia due to uncorrected refractive errors. Other causes they identified were vitreo-retinal diseases, corneal blindness and diabetic retinopathy.

Further research conducted in Oman in 2005 showed cataracts as a cause of the blindness (Khandekar et al., 2005). In Asian countries like Northern China, a case study of 6,830 in Han Chinese aged 30 years and older reported that cataract was the predominant cause of presenting bilateral blindness (Liang et al., 2008). Liang further observed that after refractive correction, cataract was the predominant cause of low vision.

Current studies show that the magnitude and causes of low vision and blindness in Asia and Africa share some similarities (Melese et al., 2003). For example case studies in Gurage zone, central Ethiopia revealed that blindness and low vision increased with age (Melese et al., 2003). The leading causes of blindness in this case study were cataract with additions like trachoma and glaucoma as causes. A hospital based study of 1,500 Medical Records from the eye clinic department in Edo state, Benin's Central Hospital also reported cataract (8.11%) as the leading cause of low vision (Akpalaba and Idogho, 2006). The contributing factors to low vision in children and adolescents in the hospital based study were myopia and optic atrophy, aphakia/dislocated lens, retinitis pigmentosa, macular degeneration, glaucoma and nystagmus. About 64.86% had moderate low vision (Akpalaba and Idogho, 2006)

indicating that causes of low vision in children and adolescents are largely preventable.

Ekpenvong and Ndukwe, (2010) reported on a study in the department of ophthalmology of Calabar Teaching Hospital that the main causes of low vision were glaucoma (33.33%), then corrected and uncorrected refractive error which was 14.67%. Other causes were found to be retinal dystrophies and maculopathy (8.0%). It was also noted that approximately 50% of the patients were 50 years old and above and the basic challenges faced included poor acceptance of the use of devices due to cosmetic reasons, durability and cost, lack of adequate referral and ignorance. The lack of research on functional low vision (FLV) for both adults and children led Shah and colleagues (2008) to conduct a Prevalence and causes of FLV among school-age children aged between 5 to 15 years from different countries (India, China, Malaysia, Chile, Nepal and South Africa (Shah et al., 2008) where it was observed that Retinal lesions and amblyopia were the commonest causes of FLV in school aged children.

The prevalence of low vision and blindness in a representative sample of the Canadian population observed cataract and visual pathway disease accounting for 40% of visual impairment (Maberley et al., 2006). Age-related macular degeneration and other retinal diseases were the next most common causes of vision loss. As encountered in other studies, diabetic retinopathy and glaucoma were less frequently encountered as causes of visual impairment. Iwase et al. (2006), conducted a study in Japanese adults (40 years and older) population in the City of Tajimi and reported that Optic atrophy, myopic macular degeneration, retinitis pigmentosa, and uveitis were the primary causes of low vision according to WHO and U.S. criteria. The leading causes of low vision were however cataracts as seen in other studies followed by glaucoma.

Considering the impact of age on vision, in Taiwan, research among elderly Chinese population in Taiwan with a mean age of 72.2 years (range: 65-91), showed a significant increase in the rate of low vision at 65 to 69 years of age or at age 80 years or older (Hsu et al., 2004). Similarly a study conducted at the Shihpai Eye to determine the prevalence and causes of visual impairment in elderly Chinese population in Taiwan showed the leading cause of visual impairment as reported in other researches and studies in both developing and developed countries as cataract (41.7%), followed by myopic macular degeneration (12.5%), and age-related macular degeneration (10.4%), as reported.

It was observed by Xu et al(2006) that most Age-related macular degeneration (ARMD) and diabetic retinopathy were responsible for a minority of the cases with subjects between 40 to 49 years old having the most frequent cause of low vision and blindness as degenerative myopia.

In relation to age, the studies observed that degenerative myopia was dominant in the younger groups and cataract dominated the older groups. This showed a contrast to other Western countries, where ARMD and diabetic retinopathy appear to play a minor role as a cause of visual impairment in elderly Chinese (Hsu et al., 2004).

The Copenhagen City Eye Study which was conducted by Buch et al. (2004) in an adult Scandinavian population indicates that for persons 65 to 84 years, cataract was the most common cause of visual impairment, whereas age-related macular degeneration was the major cause of blindness. Furtado et al in 2012 reviewed information in each country of Latin Erica region on blindness and visual impairments. The major cause of visual impairment was cataract.

Diabetic retinopathy and glaucoma were starting to make serious inroads, although epidemiological data on this are limited. Infectious diseases such as trachoma and onchocerciasis were quickly diminishing and retinopathy of prematurity remained the major cause of childhood blindness.

A study in Nigeria assessing the causes of functional low vision (FLV) among a nationally representative sample of Nigerian adults in relation to socioeconomic risk factors, (Entekume et al., 2011) showed that glaucoma was the most common cause and age the most important risk factor. About 9.3% of those with FLV were of working age and literate (Entekume et al., 2011). In Ghana cataract and Onchocerciasis have been reported as the main causes of low vision in the Wenchi district (Moll et al., 1994).

2.3 Intervention for Low Vision Patients

Low vision rehabilitation is normally done to enable patients perform activities of daily living such as moving around, doing some house chores as well as reading by themselves. This is achieved by providing appropriate optical devices and special training in the use of residual vision and low vision aids, which range from simple optical magnifiers to high power video magnifiers. Low vision aids like telescopes, stand magnifiers, close circuit television among others are given to low vision patients to enable them to perform some of these activities. Other interventions are large and boldened printed reading materials that will enable some low vision patients read comfortably.

Stelmack et al. (2008) in their study to evaluate the effectiveness of low vision rehabilitation programs, concluded that there was an improvement in visual skills with low vision intervention after low vision rehabilitation. Virgili and Rubin in 2010

implemented an Orientation and Mobility Training for Adults with low vision. This was to help those with low vision maintain travel independence. The training taught them new orientation skills and mobility skills to compensate for reduced visual information. The results of the study showed little evidence on which type of orientation and mobility training was better for people with low vision. There is still an ongoing cluster randomized control trial by Zijlstra et al in the Netherlands which seeks to compare standardized orientation and mobility training with usual orientation and mobility care not only for its effectiveness, but also its applicability and acceptability.

According to the Optometric Clinical Practice Guidelines (Freeman et al., 2007), some interventions for magnification for near vision are spectacle mounted reading lenses, telemicroscopes, hand magnifiers, stand magnifiers and electronic devices (CCTV and Head mounted devices). Telescopes or head mounted electronic devices are used for magnification for distance vision. However, some consideration should be given to Visual demands of the task, field of view, exit pupil location, image brightness or contrast, binocularity and variable magnification (Freeman et al., 2007).

For central and peripheral visual field defects, prisms can be a helpful demonstrating tool in some cases by shifting the image closer to the new retinal locus simulating eye movements. When magnifying for reduced contrast sensitivity and glare sensitivity, optimum light is needed, there should be increased magnification, and biconvex, aspheric or achromatic doublers lenses should be used. Use of tints, filters, lens coating and apertures are also very helpful. Some non-optical devices like hats, side shields and typo scopes can also be of great importance to the low vision patient. Hats and side shields could be used to reduce illumination that causes discomforts like glare for some low vision patients.

2.4 Assessing and measuring the Quality of Life of Low Vision Patients

Low vision has been known to affect the quality of life of people as it impairs and or make difficult their ability to accomplish everyday normal activities like reading, watching television, driving a car and or recognizing faces. In many parts of the world, there have been some basic eye examinations to identify visual impairments in patients to help improve the quality of life of these people. A study conducted on the impact of interdisciplinary low vision service by Hinds et al in 2003 reviewed the quality of life of low vision patients and a larger number of these patients had age related macular degeneration. Most of these patients however indicated a reduced concern about most quality of life issues. They were less anxious about the deterioration of their vision, safety within the home and coping with everyday life after the low vision service.

Improvements were observed by patients in many areas of their vision related quality of life indicating that this interdisciplinary low vision service had a positive impact on the lives of service users. However many patients were still unable to carry out their preferred everyday activities (such as cooking, driving etc.), and feelings of loneliness and isolation were unchanged.

Another study by Cahill et al (2005) to determine the quality of life (QOL) of patients with bilateral severe age-related macular degeneration (AMD) before macular translocation with 360° peripheral retinectomy assessed vision-related and general health QOL using the 25-item National Eye Institute Visual Function Questionnaire (NEI VFQ-25) and the Medical Outcomes Study 12-item Short Form (SF-12) Surveys respectively. The total number of patients studied was 70 with a mean age of 76.4 years. Mean distance visual acuity (VA) was 62.4 (Early Treatment Diabetic Retinopathy Study letters), mean near VA was 0.81 (logarithm of the minimum angle

of resolution), and mean reading speed was 74.9 words per minute. Important NEI VFQ- 25 quality of vision subscales (general vision, difficulty with distance tasks, difficulty with near tasks) and vision-specific subscales (dependency, role difficulties, mental health, social function limitations) tended to correlate negatively with increasing patient age and duration of vision loss, but correlated positively with better VA and reading speed.

The mean QOL scores for these important quality of vision and vision-specific subscales were significantly worse than or similar to mean scores in patients with low vision, and significantly worse than scores in patients with AMD of varying severity and a reference population. The mean SF-12 physical composite score in study patients was similar to that seen in patients with AMD of varying severity, but significantly higher than that in patients with low vision and a reference population.

The SF-12 mental composite score in study patients was similar to those of all 3 comparison groups. They however concluded that Patients with bilateral severe AMD have vision-related QOL similar to that of patients with low vision but significantly worse than those of patients with AMD of varying severity and persons without eye disease. This inability to perform vision-related daily tasks is not related to general health problems.

Scilley et al. (2004) in a study – Vision-specific health-related quality of life in age-related maculopathy patients presenting for low vision services stated that before a multi-site clinical trial can be conducted, appropriate outcome measures needed to be identified for ARM patients who seek for low vision rehabilitation, including a vision-specific HR QOL instrument. The 25-item National Eye Institute Visual Function Questionnaire (NEI VFQ-25) was developed to assess vision-specific HRQOL for low vision patients, including those with ARM. This study examined the performance

of the NEI VFQ-25 among ARM patients who sought low vision services and examined its relationship with visual acuity and self-reported use of low vision aids.

One hundred and twenty-seven patients were recruited from a University-affiliated low vision clinic. During two telephone interviews, subjects completed the NEI VFQ-25 and a short cognitive test and provided information on general health and use of low vision aids. Additional information on visual acuity and eye health were collected from the medical record. The results indicate that ARM patients who seek low vision services report significant impairment in their vision-specific HRQOL. Their NEI VFQ-25 scores were lower compared to other ARM and low vision rehabilitation samples previously studied. The VFQ subscales with the largest deficits were near and distance visual acuities and psychosocial issues (near vision, distance vision, role difficulties, dependency, social functioning, and mental health).

These subscale scores were lower for those with greater visual acuity impairment. The VFQ subscale scores most impacted by the disease had wide variability and were higher for those who used low vision aids; this suggested that the NEI VFQ-25 is suitable for measuring further decline and treatment-related improvements.

A study with the purpose to investigate the effect of residential blind rehabilitation on patient's vision-targeted health related quality of life (HRQOL) and general physical and mental function was conducted by Kuyk et al. (2008). The National Eye Institute 25-item Visual Function Questionnaire (NEI VFQ) plus appendix questions, the 12-item Short-Form Health Survey (SF-12), Hope Scale and Coopersmith self-esteem inventory were administered to 206 legally blind veterans prior to their entering a residential (in-patient) blind rehabilitation program and again to 185 and 176 of the original cohort at 2 and 6 months after completion of the rehabilitation program, respectively as tools for the study. Residential blind rehabilitation appeared to

improve patients self-reported vision target HRQOL, self-esteem and mental health aspects of generic HRQOL (Kuyk et al., 2008).

Scott et al (1999) also investigated the functional status and quality of life of low vision patients at a low-vision clinic and evaluated the impact of low vision services. The Medical Outcomes Study 36-Item Short Form (SF-36), the Visual Function-14 (VF-14), and the 51-item Field Test Version of the National Eye Institute Visual Functioning Questionnaire (NEI-VFQ), were administered to 156 consecutive patients 1 week before and 3 months after their low-vision clinic visit (Scott et al., 1999).

Low-vision patients scored lower ($P < .001$) in physical functioning and role limitations caused by physical and emotional health problems than published SF-36 scores of the age-appropriate United States normal population, patients with congestive heart failure, and clinically depressed patients. Low-vision services were associated with improvement in the subjective functional status of 150 patients (98.7%) and were rated "very useful" by 82 (53.9%) patients. The SF-36 scores did not change significantly after low-vision services. The VF-14 mean score improved from 35.8 to 41.2 ($P < .001$). Four NEI-VFQ subscale scores improved significantly ($P < .001$): general vision, near activities, distance activities, and peripheral vision (Scott et al., 1999). The SF-36, VF-14, and NEI-VFQ demonstrate that low-vision clinic patients perceive marked impairment of functional status and quality of life. Low-vision services were associated with high patient satisfaction. Vision-targeted questionnaires were more sensitive than general health-related quality of life questionnaires to changes in functional status and quality of life after low-vision services, and could be used to elucidate the outcomes of low-vision services (Scott et al., 1999).

2.5 National Eye Institute Vision Function Questionnaire

The National Eye Institute Vision Function Questionnaire (NEI-VFQ) is a tool used to measure vision targeted health related quality of life (Mangione et al., 1998).The National Eye Institute (NEI) sponsored the development of the VFQ-25 with the goal of creating a survey that would measure the dimensions of self-reported vision-targeted health status that are most important for persons who have chronic eye diseases. Because of this goal, the survey measures the influence of visual disability and visual symptoms on generic health domains such as emotional well-being and social functioning, in addition to task-oriented domains related to daily visual functioning. Questions included in the VFQ-25 represent the content identified during a series of condition-specific focus groups with patients who had age-related cataracts, glaucoma, age-related macular degeneration, diabetic retinopathy, or CMV retinitis (Mangione et al., 1998). The VFQ-25 consists of a base set of 25 vision targeted questions representing 11 vision-related constructs, plus an additional single-item general health rating question. The VFQ-25 generates the following vision-targeted subscales: global vision rating (1), difficulty with near vision activities (3), difficulty with distance vision activities (3), limitations in social functioning due to vision (2), role limitations due to vision (2), dependency on others due to vision (3), mental health symptoms due to vision (4), driving difficulties (3), limitations with peripheral (1) and color vision (1), and ocular pain (2). Additionally, the VFQ-25 contains the single general health rating question which has been shown to be a robust predictor of future health and mortality in population-based studies. However, to fully measure generic HRQOL, many quality of life measurement experts recommend including a separate generic measure of HRQOL such as theSF-12 or SF-36 (Mangione et al., 1996).

All items are scored so that a high score represents better functioning. Each item is then converted to a 0 to 100 scale so that the lowest and highest possible scores are set at 0 and 100 points, respectively. In this format scores represent the achieved percentage of the total possible score, e.g. a score of 50 represents 50% of the highest possible score. Serious ocular diseases that lead to irreversible loss of vision are likely to impact dimensions of a person's life beyond simple tasks such as driving or reading the newspaper, and similarly, by preserving vision, many successful interventions also will impact persons' live.

2.6 Summary of Literature

It has been established from previous studies that low-vision clinic patients perceive marked impairment of their functional status and quality of life Low-vision services are associated with high patient satisfaction. Vision-targeted questionnaires are more sensitive than general health-related quality of life questionnaires to changes in functional status and quality of life after low-vision services, and they may help elucidate the outcomes of low-vision services. None of such studies have been done in Ghana. Quality of life of low vision patients was measured using the NEI-VFQ plus either SF-12 or SF-36. Some Researchers also added the VF-14. Some of these researchers at the end of their studies concluded that the NEI-VFQ was more efficient in measuring vision related quality of life. The NEI-VFQ was adopted for this study because to fully measure generic HRQOL, the identified limitation was that the NEI-VFQ was in English language. This limitation was addressed by translating it to Ghanaian local language for those who did not understand English language. Some of the questions also did not suit the Ghanaian settings so they had to be modified without changing their contents.

CHAPTER THREE

3 METHODS

3.1 Study Design

A cross sectional descriptive study design was adopted. Patients were interviewed on telephone using the 25 item National Eye Institute Vision function questionnaire.

3.2 Study Site

The study sites were the low vision clinics at both Korle-Bu teaching Hospital and the Eastern Regional Hospital. These two clinics were the only public low vision clinics in Ghana and all low vision patients from various hospitals were referred to these two clinics.

The Korle Bu Teaching Hospital is the premier health care facility in Ghana. It is the only tertiary hospitals in the southern part of Ghana precisely the Greater Accra Region. It is also a teaching hospital affiliated with the medical school of the University of Ghana. Three centres of excellence, the National Cardiothoracic Centre, the National Plastic and Reconstructive Surgery and the Radiotherapy Centre are all located within it. The hospital was founded in 1923 as the Gold Coast Hospital. The low vision centre in Korle Bu teaching hospital was established by the hospital in collaboration with the World Health Organisation and Sight Savers International in 2005 to meet the needs of low vision cases reporting to the unit. The low vision clinic is under the Eye Department of Korle Bu teaching Hospital. The clinic had two clinic days each month (1st and 3rd Thursdays of the month). Ten patients were attended to on each clinic day so a total of about 20 patients were seen each month and this included patients for review. About 80 new patients are seen annually.

The Eastern Regional Hospital is found in Koforidua and it was established in 1926 with a mission to improve the health status of people in the surrounding communities through delivery of comprehensive, accessible, quality and affordable health care. The low vision clinic which is also under the Eye Department was established in 2007. The clinic day for the low vision clinic is every Wednesday. Five patients were seen each Wednesday so approximately 20 patients were seen at the end of the month and this included patients coming for review. About 80 new patients are also seen annually.

These two centres have contributed significantly towards the realisation of the vision 2020 theme over the years serving Ghanaians.

3.3 Outcome variable

The outcome variable was the quality of life of low vision patients and the main outcome was measured using the 25-item National Eye Institute Visual Function Questionnaire (NEI VFQ-25). The NEI VFQ-25 has the following subscale scores; general Health, General Vision, Ocular Pain, Near Activities, Distance Activities, Social Functioning, Mental Health, Role Difficulties, Dependency, Driving, Colour Vision and Peripheral Vision.

3.3.1 Independent Variables

Independent variables to explain background characteristics were: Age, Sex, Educational Background, Marital status, Location, Occupation, Annual income and Duration of vision loss.

3.4 Study Population

The study population was made up of patients visiting the low vision clinics of both Korle Bu Teaching Hospital and Eastern Regional Hospital between the previous one to two years.

3.5 Sampling

A sample size of 105 was estimated using Glen (1992) sample size calculation formula. However, a sample size of 101 was obtained from the two low vision clinics. The telephone numbers of patients visiting the clinics between the past one to two years were randomly selected by balloting. The telephone numbers of all patients visiting the clinic within the time frame were written on pieces of paper and then folded up. The papers were then randomly selected. However, about 121 telephone numbers were randomly selected to cater for about 15% non-response rate.

Using the equation: Glen (1992)

$$n = \frac{\frac{P[1-P]}{\frac{A^2}{Z^2} + \frac{P[1-P]}{N}}}{R}$$

Where

n=sample size

N= number of people in the population (approx. 120)

P=estimated variance in the population (0.5)

A=precision desired (3%)

Z=confidence level (95% level of confidence - 1.96)

R=estimated response rate (95%)

3.6 Data Collection Techniques

Telephone Interviews was adopted to answer the questions on the 25-item NEI VFQ. However, data on the patient's visual acuity, diagnosis, and intervention given was abstracted from the patient's data at the low vision clinic.

3.6.1 Data Collection Tool

A modified version of the 25 - item National Eye Institute Vision Function Questionnaire (modification did not change contents) was used as the data collection tool. The VFQ-25 generates the following vision-targeted subscales: global vision rating (1), difficulty with near vision activities (3), difficulty with distance vision activities (3), limitations in social functioning due to vision (2), role limitations due to vision (2), dependency on others due to vision (3), mental health symptoms due to vision (4), driving difficulties (3), limitations with peripheral (1) and colour vision (1), and ocular pain (2). Additionally, the VFQ-25 contains the single general health rating question. Additional questions were used to assess demographic factors such as age, sex, level of education etc. Causes of low vision as well as the duration of vision loss were extracted from the patients' folder as well as the intervention given and the patients' vision after the intervention.

3.7 Quality Control

One research assistant was trained to collect data. The research assistant was monitored as he collected the data to ensure the right thing was done. The research assistant also underwent a two day intensive training. The data was checked daily for errors and the necessary corrections were carried out. Double data entry was done. Completed questionnaire were kept in clearly labelled files.

3.7.1 Pretesting of the questionnaire

The questionnaire was pretested at the Eye Department Eastern Regional Hospital. This was done to evaluate the time needed to administer each questionnaire and accuracy in the interpretation of questions.

3.8 Data Processing and Analysis

Data was cleaned and analysed using Stata MP Version 11 and SPSS 16. Background characteristics were presented in tables using frequencies and proportions. Aside age, responses like type of occupation, monthly income, marital status and level of education for participants 16 years and below were that of their parents since they were still dependent on their parents.

Data on causes and interventions was presented using frequency tables and bar graphs. Some of the respondents had more than one cause of vision loss. Vision loss was as a result of at most two causes. Some of the anterior segment diseases were corneal scar and opacities, and also pseudophakia which are as a result of cataract surgeries.

Retinopathy stood for the various forms of retinopathies which included diabetic and hypertensive retinopathy and also retinitis pigmentosa.

A maximum of three low vision aids were given to each participant with some having none at all. Vision before and after intervention was also computed. The best possible vision for a low vision patient is 6/18 followed by 6/24 and the 6/36, 6/60, 3/60 and then CF which means counting fingers. HM (hand movement) follows counting fingers followed by PL (perception of light). The worst vision is NPL which implies no perception of light and it also means completely blind. Some low vision patients

however had some amount of vision in one eye and completely blind (NPL) in the other eye.

3.8.1 Scoring for NEI VFQ-25

Scoring VFQ-25 with or without optional items is a two-step process: first, original numeric values from the survey were re-coded following the scoring rules outlined in Table 1. All items were scored so that a high score represents better functioning. Each item was then converted to a 0 to 100 scale so that the lowest and highest possible scores are set at 0 and 100 points, respectively. In this format scores represent the achieved percentage of the total possible score, e.g. a score of 50 represents 50% of the highest possible score. In step 2, items within each sub-scale were averaged together to create the 12 sub-scale scores.

Table 2 indicates which items contribute to each specific sub-scale. Items that were left blank (missing data) were not taken into account when calculating the scale scores. Sub-scales with at least one item answered were used to generate a sub-scale score. Hence, scores represent the average for all items in the sub scale that the respondent answered. None of the 101 respondents responded to the questions on driving. They had neither driven nor owed a car so no one had scores for the variable driving.

Table 1: Scoring Key - Recoding of Items

Item Numbers	Change original response category (a)	To recoded value of:
1, 3, 4,15c (b)	1	100
	2	75
	3	50
	4	25
	5	0
2	1	100
	2	80
	3	60
	4	40
	5	20
	6	0
5,6,7,8,9,10,11,12,13,14,16,16a	1	100
	2	75
	3	50
	4	25
	5	0
	6	*
17,18,19,20,21,22,23,24,25,	1	0
	2	25
	3	50
	4	75
	5	100

* Response choice "6" indicates that the person does not perform the activity because of non-vision related problems. If this choice was selected, the item was coded as "missing."

Table 2: Step 2: Averaging of Items to Generate VFQ-25 Sub-Scales

Scale	Number of items	Items to be averaged after recoding (per Table 1)
General Health	1	1
General Vision	1	2
Ocular Pain	2	4, 19
Near Activities	3	5, 6, 7
Distance Activities	3	8, 9, 14
Social Functioning	2	11, 13
Mental Health	4	3, 21, 22, 25
Role Difficulties	2	17, 18
Dependency	3	20, 23, 24
Driving	3	15c, 16, 16a
Colour Vision	1	12
Peripheral Vision	1	10

A variable called quality of life was generated by averaging all the variables assessing quality of life to get quality of life score for each participant. Proportions and frequencies were generated for the various variables. Correlation was done to test associations between the various continuous variables. Simple linear regression was done to get significant predictors and the significant predictors were put in a multiple linear regression to predict quality of life.

3.9 Ethical consideration

Verbal consent was obtained from clients defined in the study who had visited the Low Vision Clinic of the Korle Bu Teaching Hospital and the Eastern Regional Hospital within the previous one to two years. Verbal consent was sought from parents of participants who were minors. Patient information was treated as confidential. To ensure confidentiality, names of patients did not appear on any

write-up. Proposal was submitted to the Ethical Review Committee of Ghana Health Service (GHS), Research and Development Division, Accra for approval of study. Approval was also sought from Korle Bu Teaching Hospital Eye Department and also the Eastern Regional Hospital Eye Department. There was no conflict of interest and the study was funded entirely by principal investigator.

CHAPTER FOUR

4 RESULTS

4.1 Background Characteristics of Low Vision Patients

A total of 100 patients participated from the two low vision clinics. Of the 100 patients, 46 (45.5%) of the patients were females and 54 (53.5) were males. The mean age for both males and females was 46 ± 23.4 (Table 3). Most 41 (41%) of the low vision patients were 60 years and over and about one-fifth (22) of them were less than 19 years. Many low vision patients 45 (45%) were self-employed and about 37 (37%) were unemployed. Fifty-nine percent (59) of the study participants earned monthly income of about GH¢250. The highest level of education for most of the participants was primary or junior secondary (basic education) 32(32%). Sixty six percent of the study participants were married.

Table 3: Background Characteristics of Low Vision Patients (N=101)

Characteristics	Female	Male	Total
Age(years)			
Mean ± S.D.	53 ± 22.9	41 ± 22.3	46 ± 23.4
≤ 19	9 (19.6)	13 (24.1)	22 (22.0)
20 - 39	1 (2.2)	12 (22.2)	13 (13.0)
40 - 59	11 (23.9)	13 (24.1)	24 (24.0)
60+	25 (54.3)	16 (29.6)	41 (41.0)
Employment status			
None/Unemployed	20 (43.5)	17 (31.5)	37 (37.0)
Self-employed/Informal	17 (37.0)	28 (51.9)	45 (45.0)
Government employee	9 (19.6)	9 (16.7)	18 (18.0)
Monthly Income (GH¢)			
≤ 250	30 (65.2)	29 (53.7)	59 (59.0)
250 - 499	6 (13.0)	14 (25.9)	20 (20.0)
500+	10 (21.7)	11 (20.4)	21 (21.0)
Marital Status			
Single	3 (6.5)	14 (25.9)	17 (17.0)
Married	34 (73.9)	32 (59.3)	66 (66.0)
Widowed	9 (19.6)	8 (14.8)	17 (17.0)
Level of Education			
No formal education	7 (15.2)	10 (18.5)	17 (17.0)
Basic	17 (37.0)	15 (27.8)	32 (32.0)
Secondary	14 (30.4)	12 (22.2)	26 (26.0)
Tertiary	8 (17.4)	17 (31.5)	25 (25.0)
Residence			
Northern/Middle	21 (45.6)	34 (63.0)	55 (55.0)
Southern	25 (52.3)	20 (37.0)	45 (45.0)
Total	46 (100.0)	54 (100.0)	100 (100.0)

4.2 Causes of low vision

Forty four (43.6%) of the low vision patients had suffered vision loss for about 5years and 39 (38.6%) had suffered vision loss for 6 to 10 years. Eighteen (17.8) of the low vision patients had suffered low vision for a duration of 11 or more years. The leading cause of low vision was the different types of retinopathies (27 (27.5%)) and glaucoma was responsible for 23 (23.5%) of low vision among the participants (Table 4). Eighteen (17.8%) of the low vision patients were diagnosed with 2 disease complications as the cause of low vision.

Table 4: Causes of low vision among the participants (N=118)

	N	% of cases
Birth Defect	11	11.22
Injury	8	8.16
Non-Injury Anterior Segment	16	16.33
Non-Injury Posterior Segment		
Glaucoma	23	23.47
Maculopathies	18	18.37
Retinopathies	27	27.55
Other	15	15.31
Total	118	120.41

The total percentage of cases was more than 100% because some patients had multiple causes of low vision

4.3 Corrective Devices for low vision patients

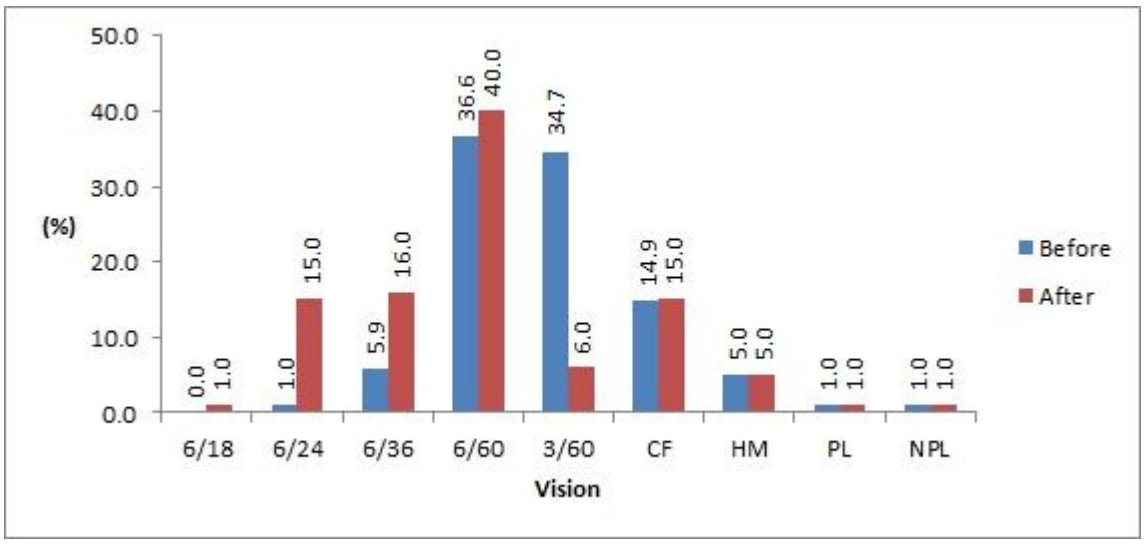
About (90.1%) of the low vision patients were given spectacle in addition to either telescopes or magnifiers. Ten (9.9%) of them received magnifiers, and ten (9.9%) also received telescopes. Ten (9.9%) also received no devices at all. A greater number 86 (95.6%) of the low vision patients were able to move around unassisted after they received the interventions. Out of the patients who received corrective devices, forty six (51.1%) of the patients were able to read with their devices and twenty five (27.8%) were also able to spot objects from a distance with their low vision devices.

4.4 Vision before and after prescription of Vision Devices

One (1%) of the low vision patients was seeing 6/24 before they were given the devices; after using the devices, 15(15%) were able to see 6/24 with their right eyes (Figure 2). The number of low vision patients who were initially seeing 3/60 initially with their right eyes reduced from 35(34.7%) to 6 (5.9%) after they were given vision devices. The low vision patients with perception of light (PL) (1 (1%)) and no

perception of light (NPL) (1 (1%)) had the same vision before and after using the devices.

Figure 2: Distance Visual Acuity (RE)



The vision of patients before and after device use in the left eye was similar to that of the right eye. From the Figure 3, about (1) 1% of the low vision patients had their vision improved to 6/18 after they were given the vision devices. Although 5(5%) of the low vision patients were seeing 6/24 before they were given the devices, after using the devices, 18(18%) were able to see 6/24 with their right eyes. The number of low vision patients who were initially seeing 3/60 initially with their left eyes reduced from 33(33.0%) to 7 (7.0%) after they were given the devices. The low vision patients with perception of light (PL) (2 (2%)) had the same vision before and after devices. One can see that low vision devices improved the vision less and lesser when the initial vision is 3/60 or less.

Table 5: Quality of Life Scores for Low vision Patients

	N	Minimum	Maximum	Mean	Standard deviation
General health	101	0	75	50.50	17.31
General vision	101	20.00	80	63.56	13.97
Ocular pain	101	12.50	100	65.97	17.33
Near activities	93	0	100	46.91	23.70
Distance activities	99	0	100	45.62	21.54
Social function	101	0	100	58.42	22.51
Mental health	101	0	75	43.01	12.26
Role difficulty	101	0	100	40.97	16.78
Dependency	101	0	100	44.97	12.75
Colour vision	101	0	100	63.61	29.05
Peripheral vision	101	0	100	47.03	22.72

(0 = Worst, 100 = Best possible score)

4.6 Factors affecting quality of life of low vision patients

General vision of the low vision patient correlated negatively with age ($r = -0.388$, $p < 0.05$) but correlated positively with total income ($r = 0.338$, $p < 0.05$). The relationship between age and general vision was negative so as a low vision patient aged, his general vision also decreased by 38.8% but as his income increased, his general vision also improved by 33.8%. There was a negative correlation between age and total monthly income ($r = -0.216$, $p < 0.05$). As the low vision patient aged, his total monthly income also depreciated by 21.6%

Looking at the factors affecting quality of life of low vision patients, there was a negative correlation between age and near activities ($r = -0.323$, $p < 0.05$), distance activities ($r = -0.309$, $p < 0.05$), social function ($r = -0.390$, $p < 0.05$) and mental health ($r = 0.210$, $p < 0.05$). As a low vision patient aged, his ability to perform near and distance activities reduced by 32.3% and 30.9% respectively. Some psychosocial

issues like mental health and social function also reduced by 21% and 39% respectively with age.

Duration of vision loss also correlated negatively with near activities ($r = -0.299$, $p < 0.05$) and social function ($r = -0.245$, $p < 0.245$). The longer the duration of vision loss of a low vision patient the lesser his social functions and near activities. As the length of vision loss increases social function reduced by 24.5% as well as near activities which also reduced by 29.9%.

4.7 Factors associated with quality of life of low vision patients

A hundred is considered the best quality of life score whiles zero is the worst score. Quality of life score of about 70 and above is considered good enough quality of life. For a unit increase in age the quality of life of low vision patients reduced by 0.28. However, holding the following variables (total monthly income, duration of vision loss, education background, type of occupation and duration of vision loss) constant, the quality of life reduced by 0.07. The quality of life of a self-employed and government employed low vision patient is higher by 9.01 and 9.77 respectively as compared to the unemployed patient. However, by adjusting for the following variables (total monthly income, duration of vision loss, education background, age and duration of vision loss), quality of life of the self-employed is higher by 2.67 than with the unemployed but that of a government employee is reduced by 3.58 than the unemployed.

The quality of life of married and widowed patients with low vision reduced by 6.07 and 23.20 times respectively than for those who were single. Adjusting for the age, type of occupation, educational background, duration of vision loss and total monthly income, the quality of life of the married and divorced patient was (7.70 for married

and 18.32 for divorced) reduced than for those who were single. The quality of life of a patient with tertiary education increased 10 times more than those who were not educated. By adjusting for total monthly income, duration of vision loss, age, type of occupation and marital status, quality of life was higher by 0.93 times for those with tertiary education as compared to the uneducated.

Table 6: Factors associated with quality of life of low vision patients

Outcome: Quality of life (0 = Worst, 100 = Best possible score)

	Unadjusted mean differences			Adjusted mean differences		
Factor	β (95% C.I.)	t	Std. error	β (95% C.I.)	t	Std. error
Age	-0.28 (-0.39, -0.16)	-4.55*	-0.06	-0.07(-0.21, 0.07)	-1.03	0.07
Type of Occupation						
Unemployed	Ref	Ref	Ref	Ref	Ref	Ref
Self employed	9.01 (2.39, 15.63)	2.70*	3.33	2.67(-3.66, 9.00)	0.84	3.18
Government Employee	9.77 (1.52, 18.02)	2.35*	4.15	-3.58(12.76, 5.60)	-0.78	4.61
Marital Status						
Single/Divorced	Ref	Ref	Ref	Ref	Ref	Ref
Married	-6.07 (-13.49, 1.35)	-1.63	3.73	-7.70(-16.83, 1.43)	1.68	4.59
Widowed	-23.80 (-33.37, -14.22)	-4.94*	4.82	-18.32(-29.81,-6.83)	-3.17*	5.77
Educational Background						
No formal education	Ref	Ref	Ref	Ref	Ref	Ref
Basic education	-1.01 (-10.31, 8.29)	-0.22	4.68	-3.69(-11.39, 4.01)	-0.95	3.87
Secondary	4.97 (-4.51, 14.45)	1.04	4.77	-3.72(-12.16, 4.73)	-0.88	4.24
Tertiary	10.47 (0.92, 20.01)	2.18*	4.80	0.93(-9.14, 11.00)	0.18	5.06
Duration of Vision Loss	-0.61 (-1.19, -0.03)	-2.07*	0.29	-0.46(-0.94, 0.02)	-1.91	0.24
Total Monthly Income	0.02 (0.01, 1.13)	4.15*	0.01	0.02(0.01, 0.03)	3.21*	0.01

*Significant at the 0.05 level (2-tailed), i.e. $p<0.05$. Ref: reference category.

The quality of life of the low vision patient was also reduced by 0.61 times with a unit increase in the duration of vision loss (as the duration increased yearly). A unit increase in the total monthly income caused the quality of life of the low vision patient to increase by 0.02.

CHAPTER FIVE

5 DISCUSSION

The data presented by the study was from a population of patients from two low visions clinics. The mean age for the low vision patients was 46 ± 23.4years. This shows low vision occurs at an earlier age among Ghanaians as compared to the developed world. This is mainly because the major cause of low vision in this population is not ARMD but conditions that are found in younger age groups. This implies that in years to come, the burden of low vision will increase as the population grows and ages. This is because most people in developing countries are now having higher life expectancy due to epidemiological transitions. There is a shift now from communicable diseases to non-communicable diseases. Those diagnosed with low vision at earlier ages may have to live with it for a very long time.

The results of the study presented an age distribution of the study participants different from previous reports from developed countries but quite similar to that of those from other developing countries. The mean age 46 ± 23.4years was however similar to that of the mean age (41.4 ± 23.8years) of the study conducted by Olusanya et al. (2012) on Profile of patients presenting at a low vision clinic in a developing country in Nigeria. The mean age in a study conducted by Cahill et al. (2005) in Canada on patients with age related macular degeneration (ARMD) was 76.4years.

The difference between the age at which people get low vision in developing and a developed country like Canada may be a reflection of older general population in developed countries and of low life expectancy among people living in developing countries. This difference between the mean ages may also be as a result that there is less availability of health facilities and health workers in developing countries and

also unavailability of modern medical technology to help in early diagnosis and treatment of disease conditions that may lead to low vision. One can therefore conclude that low vision in developed countries is mostly age related.

Among the factors contributing to the low mean age at which people present with low vision in developing countries is the fact that there are fewer numbers of healthcare personnel (Optometrists and Ophthalmologists) available to attend to a rapidly growing population. According to Cook 2009, Africa has over 13 percent of the world's population and at least a quarter of the global burden of diseases; but Africa has less than 3 percent of the world's health workforce. Other barriers to good eye health include shortage of appropriate eye health infrastructure. Ghana has only two public low vision clinics serving an entire population of about 24.97 million.

The difference in age distribution between developed and developing countries could also be due to the fact that the older generation is less likely to assess low vision facilities in developing countries.

There were more males with low vision than females in this study this may be as a result of reduced utilization and assess to eye services by females in developing countries. These findings are similar to that of a study conducted in Nigeria by Olusanya et al. (2012). In Olusanya et al. study, 65.8 percent of the low vision patients were males with male to female ratio of 1.9:1. The findings in these two developing countries differ from similar studies conducted in developed countries. For instance a study by Elliot et al. (1997) was made up of more females (60.65%) compared to males (39.35%) in Ontario, Canada. Further research into the gender distribution among low vision clinic patients may shed more light on this distribution.

5.1 Causes of low vision

Disease complication was the major cause of low vision followed by birth defects and injuries. This is because eye diseases are the leading cause of low vision. Posterior segment diseases accounted for the majority of causes of low vision in this study. This is because most posterior segment diseases cause irreversible vision loss that cannot be cured but managed (for example; glaucoma, marculopathies and retinopathies). Similar findings was observed in a low vision study in Canada by Elliot et al. (1997) where posterior segment diseases accounted for about 90% of low vision.

The difference between this study and other studies however is that some previous report by Elliot et al. (1997) found age related macular degeneration (ARMD) to be the commonest cause contributing to 75.48% of low vision whereas the commonest cause of low vision in this study was glaucoma. Ghana has been identified as the second country in the world with the highest prevalence of glaucoma and about 600,000 Ghanaians are diagnosed with glaucoma (Ghana Glaucoma Association). In sub-Saharan West Africa, the disease is said to be the leading cause of blindness, second only to cataract, and its prevalence, according to information from WHO, has been widely attributed to lack of attention and neglect. The finding that glaucoma is the leading cause of low vision is in line with the findings reported by Ekpenvong and Ndukwe, (2010) in their study at the Calabar Teaching Hospital. Glaucoma in the Calabar study was responsible for 33.33% of low vision.

Most developed countries report ARMD as the commonest cause of low vision (Elliot et al., 1997,) whiles for developing countries (Africa) it is glaucoma and this may be because people of black descent have a higher risk of developing glaucoma.

5.2 Improvement of vision among low vision patients

There are many devices (spectacle mounted reading lenses, telemicroscopes, hand magnifiers, stand magnifiers and electronic devices (closed circuit television and Head mounted devices), telescopes, side shields and typo scopes) available for improving vision in low vision patients which fall either under optical devices or non-optical devices. However, findings from this study revealed that only two low vision devices are usually prescribed at the two clinics and these are; magnifiers and different types of telescopes.

This may be due to the fact that other devices like close circuit television which costs about GH¢5000 (Eastern Regional Hospital, Eye Department Annual report) were costly and so most low vision patients may not be able to afford. Magnifiers costs between GH¢25 and GH¢30 whiles telescopes cost about GH¢45(Eastern Regional Hospital, Eye Department Annual report). Looking at the monthly income of about GH¢250 and below for about 60 percent of the low vision patient, it may be very difficult to acquire a magnifier or telescope. A low vision patient acquiring closed circuit television is almost impossible.

Although spectacles are not considered as low vision devices, most of the low vision patients were given spectacles since it enhanced contrast for them to some extent. Patients are usually diagnosed with low vision after surgery or when their vision fails to improve with spectacle correction; that is when other devices like magnifiers and telescopes are used so spectacles are not considered as low vision devices.

Most low vision patients report being able to move around, read, distant spotting and better contrast after using low vision devices. Most of the low vision patients (about 100%) saw that their vision in general improved after they were given vision devices. This finding is similar to that of a study conducted by Stelmack et al. (2008) in their

study to evaluate the effectiveness of low vision rehabilitation programs; they concluded that there was an improvement in visual skills with low vision intervention after low vision rehabilitation.

5.3 Quality of Life of Low Vision Patients

The vision function questionnaires with large deficit were that of near activities, distance activities, psychosocial issues (mental health, role difficulty and dependency) and peripheral vision. Peripheral vision may have been a problem because most of the low vision patients had glaucoma (23.3%). The findings of this study are however similar to the findings of the study conducted by Scilley et al. (2004) where the VFQ subscales with the largest deficits were near and distance visual acuities and psychosocial issues (near vision, distance vision, role difficulties, dependency, social functioning and mental health)

The mean score for social function in this study was 58.42 and considered better than scores for most of the other variables (general health, near activities, distance activities, mental health, role difficulty, dependency and peripheral vision) assessing quality of life. Near activities, distance activities, social function and mental health correlated negatively with age. This implies that as a person aged, near activities, distance activities and vision specific activities like social function and mental health reduced.

The duration of vision loss also correlated negatively with near activities and social function (vision specific). This was also observed in a study conducted by Cahill et al (2005) except for some few differences. In Cahill et al study, quality of vision subscales (general vision, difficulty with distance tasks, difficulty with near tasks) and vision-specific subscales (dependency, role difficulties, mental health, and social

function) tended to correlate negatively with increasing patient age and duration of vision loss.

Looking at the relationship between some background characteristics (age, type of occupation, marital status, education background, duration of vision loss and total monthly income) and the generated subscale called quality of life, as a person aged his quality of life also reduced. The longer the duration of vision loss, the more reduced the quality of life of a low vision patient. Increased income also causes quality of life of a low vision patient to increase. Further research is however needed to confirm these findings.

CHAPTER SIX

6 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusions

Lack of eye and low vision clinics and healthcare personnel in Ghana accounts for the late detection and diagnosis of most eye disease conditions that may lead to low vision thus a lower age of onset (46±23) of low vision. The main cause of low vision in this study was glaucoma (23.5%).

One can therefore conclude that policies which will encourage mass eye screening exercises with effective treatments would lead to a lowered incidence of low vision in Ghana. The devices prescribed for low vision patients are telescopes and magnifiers and these helped the low vision patients to perform activities like mobility, reading, distance spotting and a better contrast. However, these devices are also costly considering the monthly income of most low vision patients.

The NEI-VFQ demonstrates that low vision patients perceive marked impairment of functional status and quality of life.

6.2 Recommendations

Health education should be intensified at the national level to heighten the knowledge of glaucoma, which is a major cause of low vision. Nationwide education programs in local languages that increase the level of awareness of eye diseases especially glaucoma should be targeted at adults with less formal education and the unemployed. Effective eye health education may influence individuals to consider screening and proper care. This may lead to early detection of conditions like glaucoma and prevent low vision and blindness.

Occasional free eye screening exercises by various health facilities may also be conducted to detect ocular abnormalities leading to low vision at their early stages.

I also recommend that eye and low vision clinics should be set up by the Ghana Health Service in all district capitals especially in the Northern sector to help in early detection of eye diseases that may lead to low vision and also attend to the needs of those already diagnosed with low vision.

The Government of Ghana in collaboration with some Non-Governmental organizations can help support the provision and cost of low vision devices in the various hospitals. Government can bear some of the cost of these devices to make them affordable to the low vision patients.

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APPENDIX I

CONSENT FORM

Title; Quality of life of patients with low vision attending Korle Bu and Eastern Regional Hospitals

My name is El-Frida Adwoa Serwaa Pambo a student from the Department of Epidemiology, School of Public Health, College of Health Sciences, University of Ghana (show school ID for verification). I am in this facility to carry out a study on the quality of life of patients with low vision. The research seeks to describe the causes of low vision, describe and assess interventions given to low vision patients and also to assess their quality of life.

This research will pose minimum risk to the participants (low vision patients). The risk involved will be mainly discomfort associated with answering questions which will take some time to complete. This discomfort will be minimized by stressing on the fact that participants have the right to decline to answer questions or discuss any topics they do not wish to. Outcome of study will bring to light the extent to which low vision affects the quality of life. Knowing the causes of low vision can help in planning blindness prevention and control programs. The needs of the low vision patient may also be highlighted.

Electronic data entered in Epi Info 7 software will be made accessible only to me. I will store all study material and data (questionnaires, informed consent forms) in a locked cabinet.

Potential participants will be made aware that participating in the study is voluntary and that an individual has the right to decline to participate in the study. Again eligible persons who consent to participate will not benefit from any monetary gains.

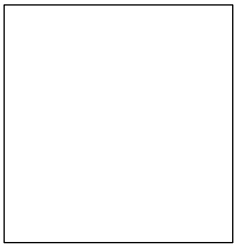
Please contact the Ethics Committee Administrator, Nana Abena Kwaa Addai – Donkor on 0244712919 for further information on the study.

RESPONDENT'S CONSENT

I have been adequately informed about the purpose, procedures and potential risks and benefits of this study. I have had the opportunity to ask questions and any question that I have asked have been answered to my satisfaction. I know that I can refuse to participate in this study without any loss of benefit to which I would have otherwise been entitled. I understand that if I agree to participate I can withdraw my consent at any time without losing any benefits or services to which I am entitled. I understand that any information collected will be treated confidentially. I freely agree to participate in this study.

Name of Participant…….

Signature or Right thumb print……



Date……

I have adequately informed the participant of the purpose, procedures, potential risks and benefits of this study. I have answered all questions to the best of my ability.

Name of Interviewer……

Signature……..

Date…….

No……

QUESTIONNAIRE

Date…….. Location…… Facility……

Age…….Sex; Male Female

What is the **main** occupation or activity from which you earn income during the past 12 months?

0. None/unemployed
1. Self-employed/informal
2. Government Employee

How much do you earn from all sources of income at the end of the month?

Salary		× 12
Self-generated Income		× 12
Remittances		× 12
Other		×12

Marital Status; 1 Single 2 Married 3 Divorced 4 Widowed

Educational Background; 1 Tertiary 2 Secondary 3 Basic Schools 4 Not Educated

Duration of Vision Loss……...

Cause of low vision……

Visual Acuity (Distance) RE LE

Visual Acuity (Near) RE LE

Kind of Intervention……

Visual Acuity after intervention

(Distance) RE LE

(Near) RE LE

What activity (s) can now be performed after using interventions ……

…….

Visual Functioning Questionnaire – 25

PART 1 - GENERAL HEALTH AND VISION

1. In general, would you say your overall health is*:

   Excellent 1

   Very Good..... 2

   Good..... 3

   Fair 4

   Poor 5

2. At the present time, would you say your eyesight using both eyes (with glasses or contact lenses, if you wear them) is excellent, good, fair, poor, or very poor or are you completely blind?

   Excellent 1

   Good..... 2

   Fair 3

   Poor 4

   Very Poor 5

   Completely Blind 6

3. How much of the time do you worry about your eyesight?

   None of the time..... 1

   A little of the time 2

   Some of the time 3

   Most of the time 4

   All of the time? 5

4. How much pain or discomfort have you had in and around your eyes (for example, burning, itching, or aching)? Would you say it is:

   None..... 1

   Mild..... 2

   Moderate 3

   Severe, or 4

   Very severe?..... 5

PART 2 - DIFFICULTY WITH ACTIVITIES

The next questions are about how much difficulty, if any, you have doingcertain activities wearing your glasses or contact lenses if you use themfor that activity.

5. How much difficulty do you have reading ordinary print in newspapers? Would you say you have:
   No difficulty at all 1
   A little difficulty..... 2
   Moderate difficulty..... 3
   Extreme difficulty..... 4
   Stopped doing this because of your eyesight 5
   Stopped doing this for other reasons or not
   Interested in doing this 6

6. How much difficulty do you have doing work or hobbies that require you to see well up close, such as cooking, sewing, fixing things around the house, or using hand tools? Would you say:
   No difficulty at all 1
   A little difficulty..... 2
   Moderate difficulty..... 3
   Extreme difficulty..... 4
   Stopped doing this because of your eyesight..... 5
   Stopped doing this for other reasons or not
   Interested in doing this 6

7. Because of your eyesight, how much difficulty do you have finding something on a crowded shelf?
   No difficulty at all 1
   A little difficulty..... 2
   Moderate difficulty..... 3
   Extreme difficulty..... 4
   Stopped doing this because of your eyesight 5
   Stopped doing this for other reasons or not
   interested in doing this 6

8. How much difficulty do you have reading street signs or the names of stores or recognizing faces from afar?
   No difficulty at all 1
   A little difficulty..... 2
   Moderate difficulty..... 3
   Extreme difficulty..... 4
   Stopped doing this because of your eyesight..... 5
   Stopped doing this for other reasons or not
   interested in doing this 6
9. Because of your eyesight, how much difficulty do you have going down steps, stairs, or taxis in dim light or at night?
   No difficulty at all 1
   A little difficulty..... 2
   Moderate difficulty.....3
   Extreme difficulty..... 4
   Stopped doing this because of your eyesight..... 5
   Stopped doing this for other reasons or not
   interested in doing this 6
10. Because of your eyesight, how much difficulty do you have noticing objects off to the side while you are walking along?
    No difficulty at all 1
    A little difficulty..... 2
    Moderate difficulty..... 3
    Extreme difficulty..... 4
    Stopped doing this because of your eyesight..... 5
    Stopped doing this for other reasons or not
    interested in doing this 6
11. Because of your eyesight, how much difficulty do you have seeing how people react to things you say?
    No difficulty at all 1
    A little difficulty..... 2
    Moderate difficulty.....3
    Extreme difficulty..... 4
    Stopped doing this because of your eyesight..... 5

Stopped doing this for other reasons or not interested in doing this 6

12. Because of your eyesight, how much difficulty do you have picking out and matching your own clothes?
    No difficulty at all 1
    A little difficulty..... 2
    Moderate difficulty..... 3
    Extreme difficulty..... 4
    Stopped doing this because of your eyesight..... 5
    Stopped doing this for other reasons or not interested in doing this 6

13. Because of your eyesight, how much difficulty do you have visiting people in their homes, at parties, or in restaurants?
    No difficulty at all 1
    A little difficulty..... 2
    Moderate difficulty..... 3
    Extreme difficulty..... 4
    Stopped doing this because of your eyesight..... 5
    Stopped doing this for other reasons or not interested in doing this..... 6

14. Because of your eyesight, how much difficulty do you have going out to funerals and religious gatherings?
    No difficulty at all 1
    A little difficulty..... 2
    Moderate difficulty.....3
    Extreme difficulty..... 4
    Stopped doing this because of your eyesight..... 5
    Stopped doing this for other reasons or not interested in doing this 6

15. Now, I'd like to ask about driving a car. Are you currently driving, at least once in a while?

Yes..... 1 *Skip To Q 15c*

No 2

15a. IF NO, ASK: Have you never driven a car or have you given up driving?

Never drove..... 1 *Skip To Part 3, Q 17*

Gave up..... 2

15b. IF GAVE UP DRIVING: Was that mainly because of your eyesight, mainly for some other reason, or because of both your eyesight and other reasons?

Mainly eyesight..... 1 *Skip To Part 3, Q 17*

Mainly other reasons..... 2 *Skip To Part 3, Q 17*

Both eyesight and other reasons ..... 3 *Skip To Part 3, Q 17*

15c. IF CURRENTLY DRIVING: How much difficulty do you have driving during the daytime in familiar places? Would you say you have

No difficulty at all 1

A little difficulty..... 2

Moderate difficulty..... 3

Extreme difficulty..... 4

16. How much difficulty do you have driving at night? Would you say you have:

No difficulty at all 1

A little difficulty..... 2

Moderate difficulty..... 3

Extreme difficulty..... 4

Have you stopped doing this because of your eyesight 5

Have you stopped doing this for other reasons or are you not interested in doing this..... 6

16a. How much difficulty do you have driving in difficult conditions, such as in bad weather, during rush hour, on the freeway, or in city traffic?
Would you say you have:
No difficulty at all 1
A little difficulty..... 2
Moderate difficulty..... 3
Extreme difficulty..... 4
Have you stopped doing this because
of your eyesight 5
Have you stopped doing this for other
reasons or are you not interested in
doing this..... 6

PART 3: RESPONSES TO VISION PROBLEMS

The next questions are about how things you do may be affected by your vision. For each one, I'd like you to tell me if this is true for you all, most, some, a little, or none of the time.

All of thetime
Most of the time
Some of the time
A little of the time
None of the time

17. Do you accomplish less than you would like because of your vision? 1 2 3 4 5

18. Are you limited in how long you can work or do other activities because of your vision?..... 1 2 3 4 5

19. How much does pain or discomfort in or around your eyes, for example, burning, itching, or aching, keep you from doing what you'd like to be doing? Would you say: 1 2 3 4 5

For each of the following statements, please tell me if it is definitely true, mostly true, mostly false, or definitely false for you or you are not sure.

(Circle One On Each Line)

1 Definitely True 2 Mostly True 3 Not Sure 4 Mostly False 5 Definitely False

20. I stay home most of the time because of my eyesight

    1 2 3 4 5

21. I feel frustrated a lot of the time because of my eyesight

    1 2 3 4 5

22. I have much less control over what I do, because of my eyesight

    1 2 3 4 5

23. Because of my eyesight, I have to rely too much on what other people tell me

    1 2 3 4 5

24. I need a lot of help from others because of my eyesight

    1 2 3 4 5

25. I worry about doing things that will embarrass myself or others, because of my eyesight

    1 2 3 4 5