An Evaluation of the Public Sector Optometric Service Provided within the eThekwini and the surrounding health districts in Kwa Zulu-Natal, South Africa.

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An Evaluation of the Public Sector Optometric Service Provided within the eThekwini and the surrounding health districts in Kwa Zulu-Natal, South Africa

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DECLARATION

I, Moraka Ephraim Maake, declare that:

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DEDICATION

The thesis is dedicated to my loving wife, whose support and perseverance has motivated me through the many trials and tribulations of my study journey; and to my precious two sons. To my parents, my sister and all my brothers who cheered me on throughout the process and demonstrated their faith in me. To my aunt (*Rakgadi* Grace) for always being a pillar of strength.

Above all, I dedicate this to my Heavenly Father.

For Bella, Hlalo and Mali

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TABLE OF CONTENTS

TOPIC	Page
TITLE	i
DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENTS	iv
1. INTRODUCTION AND MOTIVATION	1-4
2. LITERATURE REVIEW	
2.1 SCOPE OF PRACTICE FOR OPTOMTERISTS	5-7
2.2 CURRENT ROLE OF OPTOMETRISTS	7-8
2.3 PREVALENCE OF EYE DISEASES	8-9
2.4 RATIO OF POPULATION TO OPTOMETRIST	10
2.5 PROFILE OF KWAZULU/NATAL PROVINCE AND THE ETHEKWINI AND THE SURROUNDNG DISTRICTS	11
2.6 EYE CARE PROGRAMMES	11-13
2.7 PUBLIC HEALTH OPTOMETRY (LOCAL AND INTERNATIONAL)	13-14
2.8 IMPACT OF OPTOMETRIC SCOPE OF PRACTICE EXPANSION INTERNATIONALLY	14-15
2.9 NATIONAL HEALTH INSURANCE	15
3. CHAPTER 3: METHODOLOGY	
3.1 AIM	16
3.2 OBJECTIVES	16
3.3. RESEARCH METHODS	
3.3.1 ETHICAL CLEARENCE	16
3.3.2 STUDY DESIGN	16
3.3.3 STUDY POPULATION	16
3.3.4 STUDY SAMPLE	17
3.3.5 SELECTION CRITERIA	
3.3.5.1 SELECTION OF STUDY SITES	17-18

3.3.5.2 SELECTION OF PATIENT RECORDS 18
3.3.5.3 SELECTION OF OPTOMETRISTS 18
3.3.5.4 INCLUSION CRITERIA 18-19
3.3.5.5 EXCLUSION CRITERIA 19
3.3.6 DATA GATHERING INSTRUMENTS 19
3.3.7 RESEARCH PROCESS 19-20
3.3.8 DATA CAPTURING AND ANALYSIS 20
3.3.9 ETHICAL CONSIDERATION 20-21

4. RESULTS 22
4.1 SUBJECTS (Patients)
4.1.1 PATIENT DEMOGRAPHIC PROFILE
4.1.1.1 GENDER 23-24
4.1.1.2 RACE 24-25
4.1.1.3 AGE 26
4.1.2 PRESENTING COMPLAINTS 27
4.1.3 TESTS CONDUCTED 28-29
4.1.4 DIAGNOSIS AND MANAGEMENT STRATEGIES EMPLOYED 29-33
4.2 OPTOMETRISTS
4.2.1 PROFILE OF OPTOMETRISTS 33-34
4.2.2 OUTREACH SERVICES
4.2.2.1DISTANCE TO OUTREACH FACILITY 35
4.2.2.2 NUMBER OF PATIENTS SEEN AT OUTREACH FACILITY 35
4.2.2.3 WAITING PERIOD AT OUTREACH FACILITY 35-36
4.2.2.4 NUMBER OF PATIENTS EXAMINED 36
4.2.2.5 SERVICES PROVIDED AT OUTREACH FACILITY 36
4.2.2.6 REASONS FOR NOT PROVIDING SERVICES 36-37
4.2.3 BASE HOSPITAL SERVICES
4.2.3.1 SERVICES PROVIDED 38
4.2.3.2 REASONS FOR NOT PROVIDING SERVICES 38-40

4.2.3.3 REFERRALS TO OTHER HEALTH CARE PROFESSIONALS 40-41
4.2.3.4 EQUIPMENT 41-43
4.2.4 OPTOMETRY SCOPE EXPANSION 43-45

5. DISCUSSION
5.1 SUBJECTS (Patients)
5.1.1 PROFILE
5.1.1.1GENDER 46
5.1.1.2 RACE 47
5.1.1.3 AGE 47-48
5.1.2 PRESENTING COMPLAINTS 48-49
5.1.3 TESTS 49-50
5.1.4 DIAGNOSIS 50-51
5.1.5 MANAGEMENT 51-52
5.2 OPTOMETRISTS
5.2.1 PROFILE
5.2.1.1 AGE 52
5.2.1.2 GENDER 53
5.2.1.3 AREA 53
5.2.1.4 JOB TYPE 54
5.2.2 OUTREACH 54-55
5.2.3 REFERRALS 55-57
5.2.4 SERVICES 57-59

6. CONCLUSION AND RECOMMENDATIONS 60-66
LIMITATIONS 65
CONCLUDING RECOMMENDATION 65

7. REFERENCES 69-76

8. APPENDICES

APPENDIX 1-	Data collection form.	*b*
APPENDIX 2-	Questionnaire for optometrists.	*c-f*
APPENDIX 3-	Letter of Approval to conduct a study from the Department of Health Provincial Office.	*g*
APPENDIX 4-	Consent form and information document	*h-i*
APPENDIX 5-	Abbreviations / Acronym	*j-l*

CHAPTER 1: INTRODUCTION AND MOTIVATION

The number of people who suffer from vision impairment and blindness globally continues to rise even though approximately 75% of vision impairment can be prevented, treated or cured[1]. Vision impairment impacts negatively on the quality of life of the affected individuals as well as on the economic productivity in developing countries such as South Africa. Most visually impaired adults are denied the opportunity to actively participate in the mainstream economy, thus creating an added burden to the respective governments to have to cater for the needs of those unemployed due to their disability. Additionally, visually impaired children are more likely to be left out of the education system as most countries do not have adequate facilities to cater for the disabled. Deprived of formal education, these children ultimately rely on social grants and handouts during their adult lives[2].

In South Africa, optometry has been a profession traditionally positioned within the private sector, with optometrists practicing primarily in solo, group or association practices. The situation has slowly changed over the past decade with optometry being introduced into the government health care system in many parts of the country[3]. This development allows optometrists opportunities to practice within multidisciplinary environments in public sector facilities closer to the communities. Public hospitals, comprehensive health care centres and clinics are usually able to orientate themselves to the communities that they serve more effectively than private optometry practices. Hafner[4] suggested that there is a greater opportunity in a comprehensive health care environment for interdisciplinary and cooperative clinical care efforts than by individual solo practitioners.

Walls[5] in 1996 indicated that optometry has much to offer towards eye care services in the government hospitals as it is well positioned as a primary health care profession. He further states that there is a need for optometrists to have full scope practice acts and practice to the fullest extent possible in order to be cost effective in the health care delivery system. This full scope practice will include the diagnosis and non-surgical treatment of anterior segment ocular diseases.

The bulk of the blindness in sub-Saharan Africa (SSA) is preventable or curable. The most common causes of blindness *(visual acuity in the better eye lower than 3/60 at presentation*) in order are cataract, uncorrected refractive error and macular degeneration, whilst causes of moderate and severe vision impairment (MSVI) *(visual acuity in the better eye lower than 6/18 but at least 3/60 at presentation)* are uncorrected refractive error cataracts and macular degeneration[1]. The cataract surgical rate is defined as the number of cataract operations performed per year per million populations. The estimated cataract surgical rate (CSR) in Africa is low when compared with industrialized countries.

One of the reasons identified for the low CSR in South Africa is that surgeons spend their time performing other non-surgical work (screening, refractions, administration)[6].

There are approximately 3527 optometrists[7] (As at 06 May 2014), 55 ophthalmic medical officers, 65 ophthalmic nurses and 275 ophthalmologists in South Africa[6]. Whilst 235 optometrists[8] are employed in the public sector, only 70 ophthalmologists work in government practice[6]. The number of ophthalmologists working within the public sector makes it virtually

impossible for them to be able to deal with the surgical demands as well as the non-surgical treatment of ocular diseases.

Eye care personnel like optometrists deal with refractive errors and other preventable causes of blindness, including the medical treatment of eye disease[9]. With the number of registered optometrists in South Africa exceeding that of ophthalmologists by more than tenfold, consideration should be given to better utilize this cadre of eye care worker towards improving the eye health care system. Optometrists could work as part of a team with ophthalmologists or cataract surgeons to render efficient eye care services. Therefore the role played by all members of the eye care team needs to be looked at, with the goal of getting the maximum benefit from each of the respective eye health professionals.

The eThekwini district is surrounded by 3 districts which employ optometrists. A preliminary review of the districts revealed that:

- eThekwini District has 13 hospitals.
- iLembe District has 4 hospitals.
- Ugu District has 5 hospitals.
- UMgungundlovu District has 9 hospitals.

Not all hospitals have optometric services, requiring that in some instances, employed optometrists need to render outreach services to institutions that do not have any optometry services. The services rendered by optometrists employed in the districts are provided according to the capacity of this limited resource and is not defined according to any needs informed plan.

Anecdotal reports have indicated that although optometry posts have been created in some hospitals in South Africa, services rendered by public sector optometrists were mostly limited to refraction and the provision of spectacle prescriptions to patients. This will mean that these optometrists working within the public sector may not be practicing the full scope of optometry in accordance with their education and training or as defined in the Health Professions Act[10].

Since the introduction of optometry posts within the public sector, there has not been a study conducted to evaluate the services that optometrists rendered to the public within a health district. Their initial employment within the public sector was largely introduced according to a perceived need as the preliminary research that should have been done prior to program implementation did not occur. Noting the increasing numbers of optometrists being employed within the public sector, the researcher felt the need to undertake an evaluation of the optometric services being delivered by the optometrists employed with the aim of informing the planning and development of future optometric programs within the public sector. This study therefore aims to address the question as to whether optometrists employed are fully utilized according to their scope of practice and their contribution to the eye care service delivery within the district health service.

The specific objectives of the study were to:

- Determine the role played by optometrists in the KwaZulu/Natal province public sector facilities.
- Evaluation of eye care services rendered by them at the hospitals within the selected districts.

CHAPTER 2. LITERATURE REVIEW

2.1. SCOPE OF PRACTICE FOR OPTOMETRISTS

The term optometry is derived from Greek words *Opsis* - meaning "view" and *metron* – meaning "something used to measure". The original purpose of optometry was to measure vision[11]. However, the professional scope had developed significantly over the years and continues to expand all around the world. The World Council of Optometry defines optometry as a healthcare profession that is autonomous, educated and regulated (licensed/registered), and optometrists are the primary healthcare practitioners of the eye and the visual system who provide comprehensive eye and vision care, which includes refraction and dispensing, detection/diagnosis and management of diseases of the eye, and the rehabilitation of conditions of the visual system[12]. There is no standard universal definition of the word Optometry/Optometrist which can be attributed to differences in the legislation and scope of practice for optometry across the world.

In South Africa, the optometrist is defined by the Health Professions Council of South Africa (HPCSA) as a primary health care practitioner of the eye and the visual system who provides comprehensive eye and vision care, which includes refraction and dispensing, detection/diagnosis and management of disease in the eye, and the rehabilitation of conditions of the visual system. The scope of practice of an optometrist as described in the Government Gazette No. 29748[10] as follows:

An optometrist-

i. Shall perform eye examinations on patients with the purpose of detecting visual errors in order to provide clear, comfortable and effective vision; and,

ii. Shall correct errors of refraction and related factors by the provision of spectacles, spectacle lenses, spectacle frames and contact lenses, the maintenance thereof, the use of scheduled substances as approved by the board and the Medicine Control Council or by any other means other than surgical procedures.

The scope of optometry has recently been expanded to include the use of certain drugs for diagnostic and treatment purposes[10]. However optometrists will need to be trained to acquire the relevant competencies. Currently, patients who need medical treatment for anterior segment diseases are referred to general practitioners or ophthalmologists because in South Africa optometrists were not allowed to independently use therapeutic pharmaceuticals (drugs) for treatment of patient's eye ailments. However, in many other countries, optometrists are permitted to use certain drugs to treat eye diseases[13-15]. In all states of the United States of America (USA), optometrists may do post-surgical patient care and prescribe therapeutic pharmaceuticals (drugs)[13].

In New Zealand, prescribing optometrists are allowed to independently treat a range of eye conditions. This was found to be extremely helpful, especially in areas where access to ophthalmological services is not available within a reasonable time or distance[14]. In addition more recently, optometrists in the United Kingdom (UK) were permitted to use a range of therapeutic pharmaceuticals (drugs) for both diagnosis and treatment purposes[15].

A study[16] done in the UK to evaluate the reliability in diagnosis and the diagnostic accuracy of the optometrists (glaucoma trained) in decisions regarding diagnosis and the need to treat found the performance of glaucoma trained optometrists to be at least comparable to that of junior ophthalmologist in assessing new referrals for glaucoma in a general ophthalmology clinic. This proved that trained optometrists could potentially manage and treat patients with ocular hypertension in the community without them needing to attend hospital eye services. A cost analysis on a previous trial in Bristol, examining community optometric care for monitoring glaucoma patients versus standard hospital care, found that the community optometric care, including costs of referral back to hospital for cases of uncertainty, was more expensive than standard hospital care[17]. Patel *et.al.*[18] also proved that ongoing training of optometrists resulted in an increased rate of detection of glaucoma in the community.

Hau *et.al*[19] conducted a study to evaluate the diagnostic accuracy and referral management of hospital optometrists in an Ophthalmic Accident and Emergency department in the UK and showed good correlation, in terms of primary diagnosis and management, between the optometrists and consulting ophthalmologists. This indicated that optometrists can potentially work safely in an accident and emergency department of a hospital[19].

2.2. CURRENT ROLE OF OPTOMETRISTS

In addition to providing services within the private sector, optometrists play a vital role in many of the Vision 2020 member agencies. Key organizations, like Voluntary Optometric Services to Humanity (VOSH) and Gift of Sight, may serve 100 000 or more patients per year[20]. These

and other organizations such as the Brien Holden Vision Institute were created and managed by optometrists. With refractive errors being one of the leading causes of visual impairment, optometrists globally should take the lead in addressing this significant public health problem[19]. Apart from refractions, optometrists also play a role in the diagnosis/identification of sight threatening conditions such as glaucoma. The majority of patients suspected of having glaucoma are usually referred to the Hospital Eye Services by optometrists or via their general practitioners[16].

2.3. PREVALENCE OF EYE DISEASES

A recent survey[1] estimated that 223.4 million people globally have vision impairment of which 32.4 million are classified as blind, and 191 million classified as MSVI. Leading causes for blindness worldwide were cataract (33%), uncorrected refractive error (21%) and macular degeneration (7%), and for MSVI were uncorrected refractive error (53%), cataract (18%) and macular degeneration (3%).

In Africa, the proportion of vision impairment is high when compared to most parts of the world. Despite representing 12% of the world's population, Africa contributes to 15% of the visually impaired globally. A total of 4.8 million people from the SSA contributed to the global blind population which represented a 16% increase in blind people in this region between 1990 and 2010. In 2010, there were 16.6 million people with MSVI in SSA, which was equivalent to a 28% increase between the same periods[21]. Cataract is the leading cause of blindness in this

region, but posterior segment diseases like diabetic retinopathy and macular degeneration are gaining increased importance as causes of blindness and vision impairment[21].

A previous survey by the World Health Organization (WHO) also found that developing countries constituted 60% of the blindness in the world with blindness in Africa having more than 18% of the world's blind. Two-thirds or more of this blindness found is avoidable, in that the causes are preventable or treatable[22].

According to the Census data of 2011, the estimated population of South Africa is 51.8 million and approximately 14% of population of South Africa use spectacles as a form of assistive device[23]. The 2001 survey by Statistics South Africa indicated that 5% (2255982) of the population had various forms of disability which was defined as: *A physical or mental handicap which has lasted for 6 months, or expected to last at least 6 months, which prevents the person from carrying out daily activities independently, or from participating fully in educational, economic or social activities*[24]. The prevalence of sight disability was the highest at 32% (721914)[24]. The Department of Health in the Republic of South Africa estimated the prevalence of blindness in the country to be 0.75%[25]. It was also estimated that 470588 of those people with disability reside in KwaZulu-Natal Province[26]. Naidoo *et. al.* recently found the prevalence of blindness in South Africa to be 0.9%, with leading causes being: cataract, refractive error and glaucoma respectively[27].

2.4 RATIO OF POPULATION TO OPTOMETRIST

South Africa has 3527 registered and regulated optometrists[7] serving an estimated population of approximately 52.98 million people[28]. Of these practitioners, only 235 are employed within the public service which serves 80% of the population[8]. This means that there are approximately 235 optometrist to meet the needs of 42384000 people, many of whom are indigent people living in rural areas at a ratio of about 1:180357. The remaining 3292 optometrists serve the 20% (10596 000) of the population accessing the private sector, resulting in a ratio of 1:3219. Despite the recent employment of optometrists within the public sector in certain provinces, many other provinces have still not attempted to meaningfully address this gross imbalance in the human resource distribution between the public and private sectors. However, the profession of optometry, through its organized structures, continues to engage the relevant health authorities in an attempt to recruit more optometrists into the public sector to redress the imbalances between the public and private sectors.

Although the average national ratio of optometrist to patient in South Africa is 1:15021, it varies significantly between the private sector (1:3219) and the public sector (1:180357). Comparatively, in Australia the ratio is approximately 1:7500 which is one of the highest per capita ratios of optometrists in the world[29]. This is closely followed by that of New Zealand with a ratio of 1:7517[14], whilst the USA has an average ratio of approximately 1:7848[13]. The World Health Organization recommends a ratio of 1:100000 for optometrists/refractionists and 1:250000 for ophthalmologists[20]. However these recommendations are questionable as to whether application of these ratios will be adequate to achieve the Vision 2020 targets[7,8].

2.5 PROFILE OF KWA-ZULU/NATAL PROVINCE AND THE ETHEKWINI AND SURROUNDING DISTRICTS

In 2014 KwaZulu-Natal province had an estimated population of about 10,69 million people, which was the second largest in South Africa[30] and the population distribution among municipalities were as follows: 3442361 people resided in the eThekwini District; 606809 in iLembe; 722484 in UGu District,1 017 763 in uMgungundlovu District. The unemployment rate in these districts was as follows: eThekwini (30.2%), iLembe (30.6%), Ugu (35.2%), and uMgungundlovu (30.4%)[31]. With this unemployment rate higher than the national average, the majority of the people in these districts will thus rely on the public health system for their eye care services.

2.6 EYE CARE PROGRAMS

The establishment of a national prevention of blindness program is very important for planning and evaluation purposes of blindness prevention activities. Its formulation makes it possible to assess overall needs and resources and the input from many sectors help to contribute to developing blindness prevention strategies. In most of the WHO member states, national committees for the prevention of blindness have been formed, usually under the leadership of the ministry of health[32]. These committees include representatives of other sectors and NGOs. Some of the primary functions of these committees are:

- get national programs off the ground
- serve as forums for setting technical standards
- co-ordinate activities related to eye and vision care

- mobilize resources

One of the most important aspects in developing the national blindness prevention programs is to include an evaluation component. This is an important tool to demonstrate progress and cost effectiveness[32].

Different models of service are used in various countries, depending on the need of the population or community. Australia has a model for service delivery in remote centres to address eye care service delivery[33]. Primary eye care services such as optometry and ophthalmology are provided in a range of settings including community service centres, doctors and specialists rooms and hospitals. Usually, these services are funded by the state, territory and federal government. The health workers screen for diabetic retinopathy and visual acuity, followed by the scheduled visit of an optometrist who works regularly in a given community. These visits may be coordinated with a visiting ophthalmologist or held independently. The frequency of the visits in communities might vary widely where in some, visits on a regular monthly basis occur, whilst in other smaller communities they are on an annual basis. The optometrist generally bills for the examination or, in some instances receives a subsidy to cover travel, accommodation or lost revenue (The Visiting Optometry Scheme).

The primary health care approach, one of the cornerstones of the WHO programs, can help address the problem of blindness in developing countries including South Africa. Walls[34] indicated that optometrists can serve as primary eye care workers in hospitals. They will however need to be trained in dealing with common eye diseases, recognizing and treating

certain disorders and knowing when to refer others for further examination and treatment. Activities to be carried out at the community level Include:

- the promotion of eye health
- clinical activities

Clinical management actions can be divided into:

- Disorders recognized and treated locally, e.g. conjunctivitis and superficial foreign body removal.
- Disorders to be recognized and initial treatment given before referral e.g. ocular trauma.
- Disorders which should be recognized and referred for further action e.g. cataract.

This model can help address blindness and visual impairment in rural areas[32]. Primary eye care comprises a simple but comprehensive set of promotive, preventative and curative actions that can be carried out by suitably trained primary health workers, specialized auxiliary personnel or other interested people[35].

2.7 PUBLIC HEALTH OPTOMETRY (LOCAL AND INTERNATIONAL)

Although most public hospitals in South Africa provide ophthalmology services to patients, only a few of these provide optometric services[3]. South Africa has relied on NGOs and the private sector to provide optometry services to the population. Unfortunately, the majority of the population, most of who live in remote rural areas, could not access the optometry services which are largely situated in urban areas. Although NGOs have provided optical correction to many people, it is suggested that this may not be the best use of resources as sustainable

government systems are required to make a significant dent in the overwhelming global need for the correction of refractive errors and management of other ocular conditions.

Unfortunately there is dearth of published information highlighting the utilization of optometrists within the health sectors in across Africa. However, anecdotal reports indicate that NGOs, as in South Africa are sole provider of eye care services in many countries. The public health approach is regarded as one of the ways for the provision of direct clinical services as it develops the local capacities in a sustainable way[20]. The WHO has recommended that eye care delivery be integrated into the general health services at all levels[35].

2.8. IMPACT OF OPTOMETRIC SCOPE OF PRACTICE EXPANSION INTERNATIONALLY

A review of the timelines for scope of practice enactments globally revealed that the use of diagnostic and therapeutic drugs by optometrists dates back to more than 30 years ago, with West Virginia being the first state in the USA where the Therapeutic pharmaceutical legislation was enacted in 1976[36].

In the UK, accredited glaucoma optometrists could potentially manage and treat patients with ocular hypertension in the community without their needing to attend the hospital eye services and patients with glaucoma could start treatment immediately while waiting to be seen at the hospital eye service. Due to the reduced suspect cases referred to the eye hospital by optometrist, there was a financial cost saving to the National Health Scheme[16].

In South Africa this could additionally ease the workload of GPs who are already overburdened by other patients with other conditions. Noting the benefits of the expanded scope in the various countries thus far, it is prudent for an evaluation to be conducted in South Africa to determine the current status of optometric services and potential impact that any scope changes may have on this service.

2.9 NATIONAL HEALTH INSURANCE (NHI)

As a result of all challenges (including disparities between the Public and Private sector and) facing the public sector, the South African government is in the process of introducing a system of health care financing (National Health Insurance-NHI) aimed at providing universal health care coverage[37]. The objectives of NHI include amongst others is:

-To improve access to quality health services for all South Africans.

-To strengthen the under-resourced and strained public sector.

The strengthening of the South African health system will be based on a Primary Health Care (PHC) approach. PHC services will focus mainly on health promotion, preventative care, quality curative and rehabilitative services. All members of the population will be entitled to a defined comprehensive package of health services at all levels of care namely: primary, secondary, tertiary and quaternary with guaranteed continuity of health benefit. Optometry will need to be an integral partner within this NHI to ensure that eye care objectives are met.

CHAPTER 3: METHODOLOGY

3.1 AIM

The aim of the study was to evaluate the public sector optometric services rendered in the eThekwini and surrounding districts towards informing future programs planning in eye care.

3.2 OBJECTIVES:

- Determination of the role played by optometrists in the KwaZulu/Natal province public sector facilities.
- Evaluation of eye care services rendered by optometrists at the selected hospitals within the selected districts.

3.3 RESEARCH METHODS

3.3.1 ETHICAL CLEARANCE

Ethical clearance to undertake this study was sought from the Biomedical Ethics and Research Committee of the University of KwaZulu/Natal.

3.3.2 STUDY DESIGN

A cross-sectional, retrospective and descriptive study design was used to evaluate the optometric services provided. (Qualitative and qualitative data was obtained)

3.3.3 STUDY POPULATION:

Patients and optometrists in the KwaZulu-Natal province of South Africa.

3.3.4 STUDY SAMPLE

30% of hospitals that offer optometric services in the eThekwini and the 3 surrounding districts (iLembe, Ugu and uMgungundlovu districts) were selected and 30% of patient records were selected for analysis. All optometrists working in the selected districts were included.

3.3.5 SELECTION CRITERIA

3.3.5.1 Selection of study sites

The study was conducted at eThekwini and the 3 surrounding districts (iLembe, Ugu and uMgungundlovu districts), which in essence had the highest population density. Random selection was used to select 30% of hospitals (which offered optometry services on a full time basis in 2012) from the four districts. There were 14 hospitals that provided optometric services in the above-mentioned districts, and five (35,7%) were selected to form part of the study. eThekwini district as the biggest district in terms population and number of hospitals was more represented compared to the other districts, hence two hospitals were selected from this district and 1one from each of the other districts.

Random selection method was used for each district in the following manner:

All hospitals that offered optometric services in each district were coded and the codes were written on a piece of paper. The papers were put in a bowl and a person (one who did not know what the pieces of paper represented) was asked to pick a set number of pieces. This was done for each district to ensure that all districts were represented. The selected hospitals were the study sites. The following hospitals were selected:

- Prince Mshiyeni Memorial Hospital –eThekwini district.
- Stanger Hospital- iLembe district

- Eddendale Hospital –uMgungundlovu District
- Mahatma Gandhi Memorial Hospital -eThekwini district
- GJ Crooks Hospital- Ugu district

3.3.5.2 Selection of patient records

Systematic selection was used to select all available optometry record cards of patients seen every 3rd day. Available records of patients seen every third day were selected at each of the selected eye health facilities. This also ensured that all days of the week are included in cases were certain procedures are done on certain days days of the week e.g. visual fields being done Wednesday. As public sector optometrists work only on week days, Saturday and Sunday records were not available, so they were not counted as days. Additionally, if records were not available for a certain selected day due to any reason e.g. the optometrist being on leave, that day was also not counted. Only days with patient records were counted as days to be included in the study.

3.3.5.3 Selection of optometrists

- Saturated sampling was used to include all employed optometrists within the public health institutions in the selected districts. During the time of study there were about 18 optometrists employed in the districts. Questionnaires were sent to all the optometrists.

3.3.5.4 Inclusion criteria:

- Records of patients who visited the public health hospital within the following districts (Ugu, iLembe, eThekwini and uMgungundlovu Districts) of the KwaZulu-Natal province from January to December 2012 were included.

- Public sector optometrist based at the above-mentioned districts.

3.3.5.5 Exclusion criteria:

- Patients who visited the selected hospitals before and after the year 2012.
- Optometrists based outside the selected public hospitals.

3.3.6 DATA GATHERING INSTRUMENTS

- A chart to capture data from the clinical record cards of patients examined from January to December 2012. **(Appendix 1)**
- Semi structured questionnaires designed and administered to optometrists. **(Appendix 2)**

3.3.7 RESEARCH PROCESS

- Informed consent was obtained from the relevant health authorities in the districts and provincial office to access the patient clinical record cards and to distribute questionnaires to optometrist who participated in the study. **(Appendix 3)**
- 30% of all record cards for patients who visited each of the selected eye health facilities in the districts were retrieved and each record card was assigned a study number to prevent duplication during data capturing. Selected clinical records of patients were reviewed and information containing details of the consultation within the eye clinics were captured **(Appendix 1)**. Information was captured according to the demographic profiles, chief complaint, visual status, tests performed, diagnosis and management approach. Data gathered was captured on SPSS version 21.(Appendix 5)

- All employed optometrists were given questionnaires to fill at each district. The survey was anonymous as each questionnaire was allocated a code as no names were required. Only optometrists who gave consent participated in the study. The questionnaires were distributed in person to each of the selected participants. This was done after an appointment had been arranged prior to the visit. Data gathered was captured on Microsoft excel.
- Acronyms/Abbreviation available Appendix 5.

3.3.8 DATA CAPTURING AND ANALYSIS

- Data (demographic profiles, chief complaint, visual status, tests performed, diagnosis and management approach) collected was captured and analysed using Statistical Packages for Social Sciences (SPSS) version 21 and Microsoft Excel Statistical Packages. Data gathered was analysed by the UKZN statistician in terms of confidence intervals(CI) calculated and signicance set at 5% (*p*: 0.05). ANOVA was utilised to analyse the variation between hospitals.

3.3.9 ETHICAL CONSIDERATION

- Ethical clearance to perform this study was sought from the Humanities and Social Sciences Research Ethics Committee (HSSEC) –(Appendix 5), University of KwaZulu-Natal.
- Informed consent was obtained from all participating optometrists. **(Appendix 4)**
- Due to the anonymity, individual patients were not required to provide consent.

- The content of the questionnaire did not present any risk or any psychological discomfort to the participants.
- Written permission was sought from the department of health to access the records for each facility **(Appendix 3)**.
- All data accessed will be kept confidential in a locked cupboard for a period of 5 years and no subject will be identified by name. Thereafter data will be destroyed by the researcher.

CHAPTER 4: RESULTS

The main aim of the study was to evaluate the services provided by public sector optometrists. A total of 2968 patient files were recorded. Of the 18 optometrists employed in the districts mentioned in Chapter 3, only 11 optometrists successfully completed the questionnaires with a response rate of 61.1%. Data from patient's records as described in Chapter 3, was collected manually, captured on Windows Excel spreadsheet for preliminary analysis and then captured on SPSS version 21 for final analysis. Optometrist questionnaires were captured on Windows Excel spreadsheet for analysis. This chapter lays out the results as analyzed using both patient's records and optometrists response in the questionnaire.

4.1 SUBJECTS (Patients)

4.1.1 PATIENT DEMOGRAPHIC PROFILE

4.1.1.1 Gender

In total, 2968 files were recorded. The majority of the subjects were female (67.6%), and only 32.4 were males.

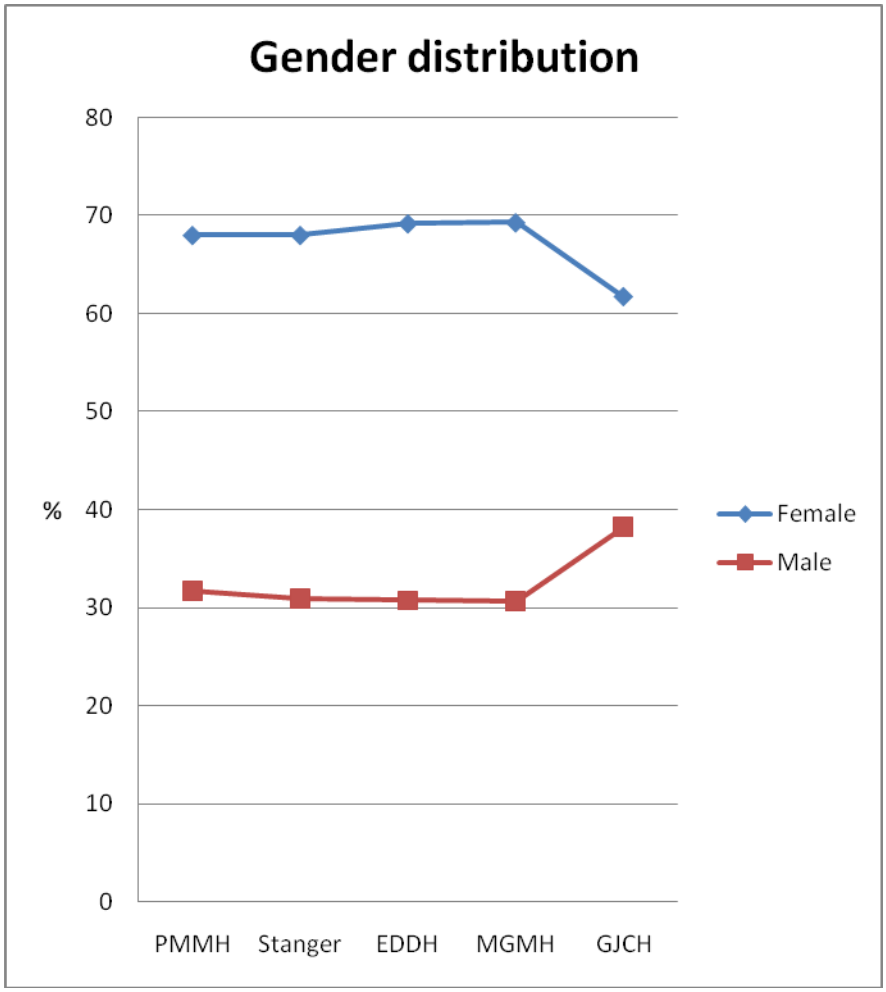

Figure 1: Showing the gender distribution at different hospitals

There was variation in gender representation across the hospitals. GJ Crooks Hospital (GJCH) had a higher representation of males (38.3%) and a lower representation of females (61.7%) compared to the rest of the hospitals. In all hospitals, there was a high representation

of females (67.6%) than males (32.4%). Males were less likely to attend eye health facilities than females (p= 0.005), meaning that this was unlikely to be due to chance and the variation across the hospitals was statistically significant.

4.1.1.2 Race

Racial distribution as illustrated in Figure 5 was as follows: the bulk of subjects (75.3%) were classified as Africans, followed by Indians (22.0%) and the remaining subjects (2.7%) were White, Coloured and others.

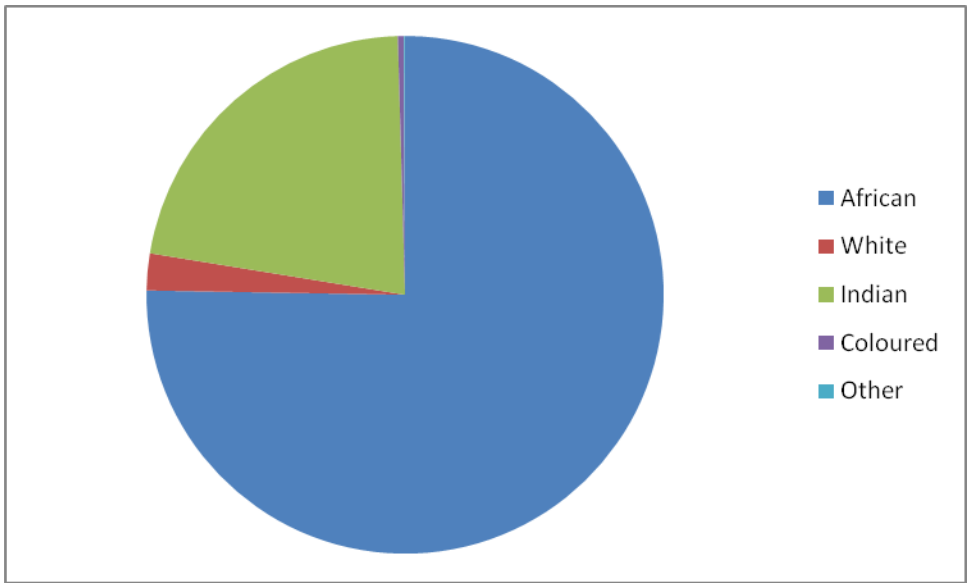

Figure 2: Pie chart illustrating the racial distribution of subjects.

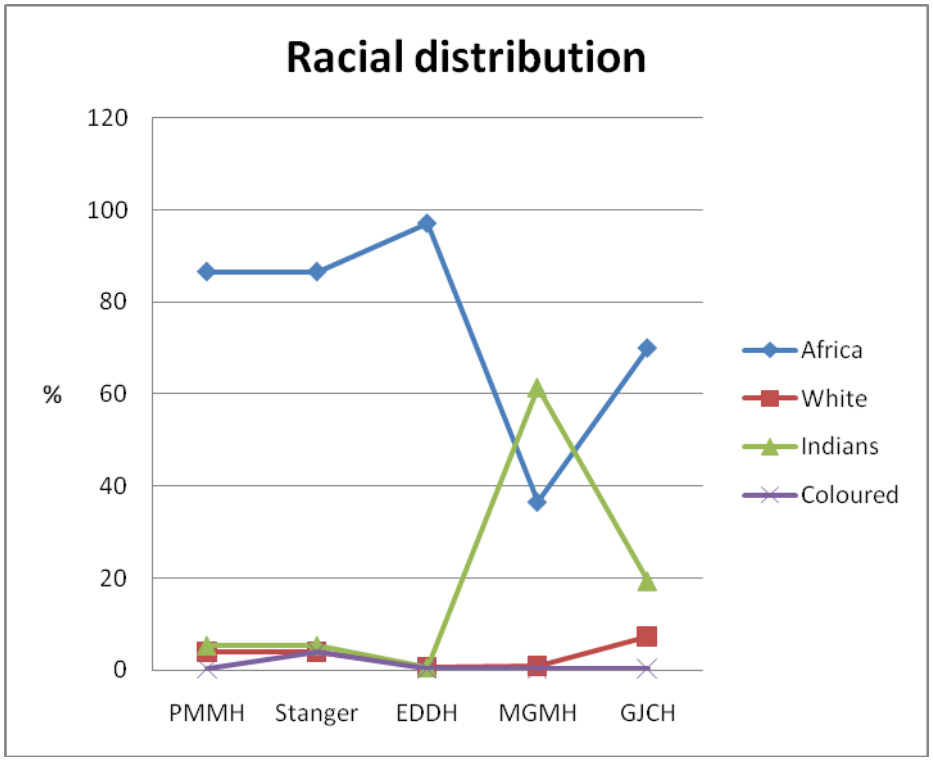

Figure 3: Showing racial distribution at different hospitals.

All hospitals showed a high representation of Africans, with the exception of Mahatma Gandhi Memorial Hospital (MGMH) which had an Indian representation of 61.4%. The highest percentage of Africans was recorded at Edendale Hospital (EDDH). Whites and Coloureds had a low representation across all hospitals. Eye health facilities were visited mostly by Africans than other racial groups (p=0.000).

4.1.1.3 Age

Only 14.0% of subjects were less than 18 years old whilst 70.5% were aged 40 years and older. The subject's ages ranged from 1 year to 97 years with median age of 52 years and mean age of 47.8 years.

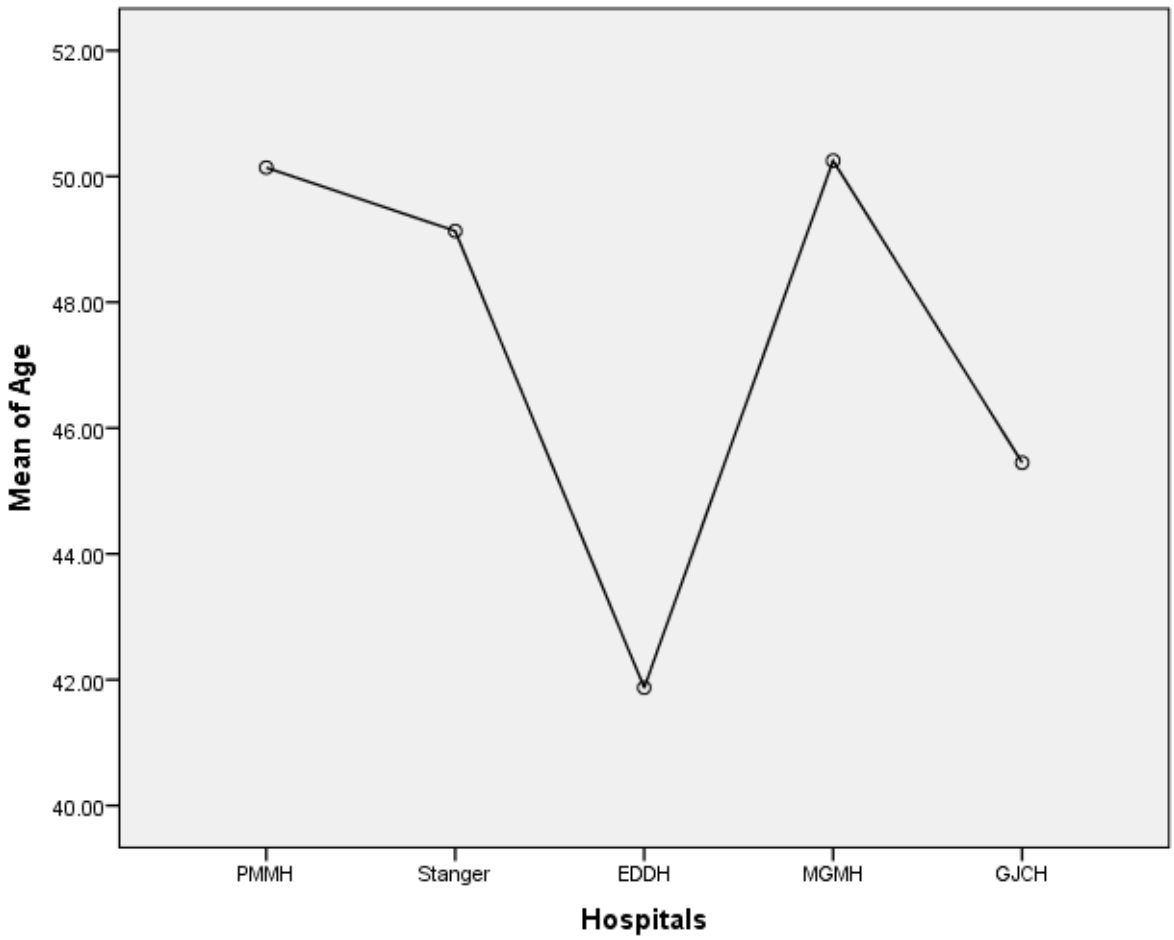

Figure 4: Showing the mean age at different hospitals

A high mean age was recorded at Prince Mshiyeni Memorial Hospital (PMMH) (50.14yrs), Stanger Hospital (49.13yrs) and MGMH (50.25yrs), with GJCH (45.45yrs) recording a slightly lower mean. Of all hospitals, EDDH recorded the lowest mean of age (41.87yrs).

4.1.2 PRESENTING COMPLAINTS

Presenting complaints included reduced vision (82.0%), binocular vision(BV) (1.4%), pain (3.2%), trauma (1.7%) and routine examinations (6.7%). Complaints presented that were not stipulated on the record card were classified as others (20.2%). The remaining subjects were referred (14.6%) from other health facilities.

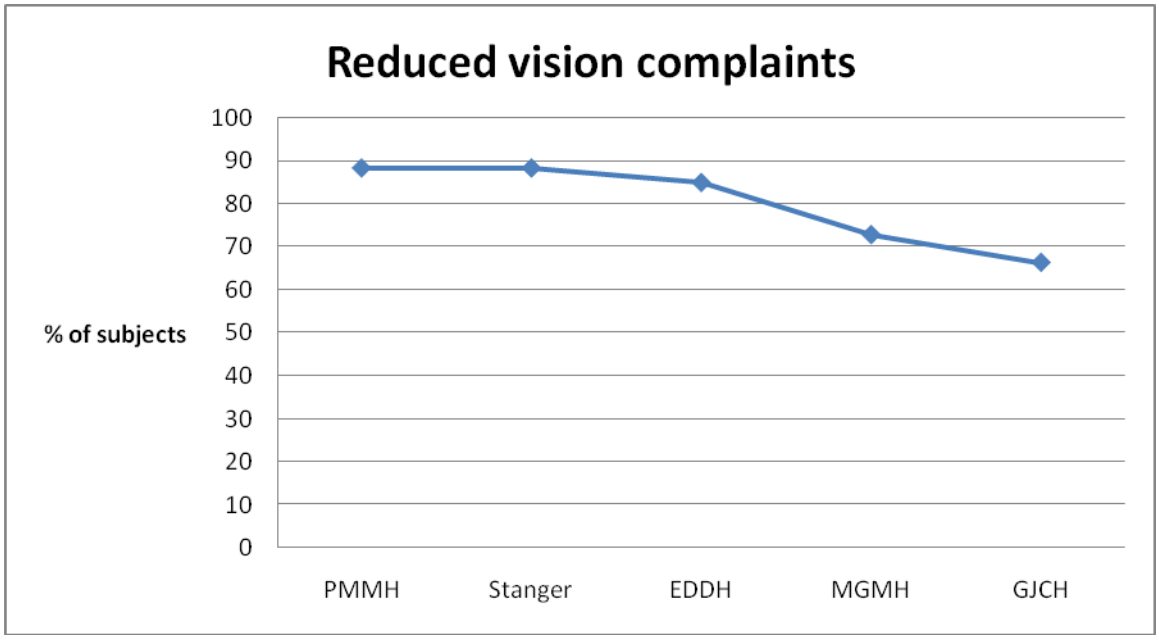

Figure 5: Showing the representation of subjects (%) who presented with reduced vision at different hospitals.

Both GJCH (66.3%) and MGMH (72.8%) had a low presentation of reduced vision complaints, whilst PMMH (88.4%), Stanger (88.4%) and EDDH (85.0%) had a high representation of subjects who presented with reduced vision. Reduced vision (p=0.000) was the complaint presented by most subjects to eye health facilities.

4.1.3 TESTS CONDUCTED

As shown in Figure 6, the most frequent tests conducted on subjects were refraction and ophthalmoscopy done on 86.7% and 75.4% of subjects respectively, followed by slit lamp bio-microscopy which was performed on 27.7% of subjects.

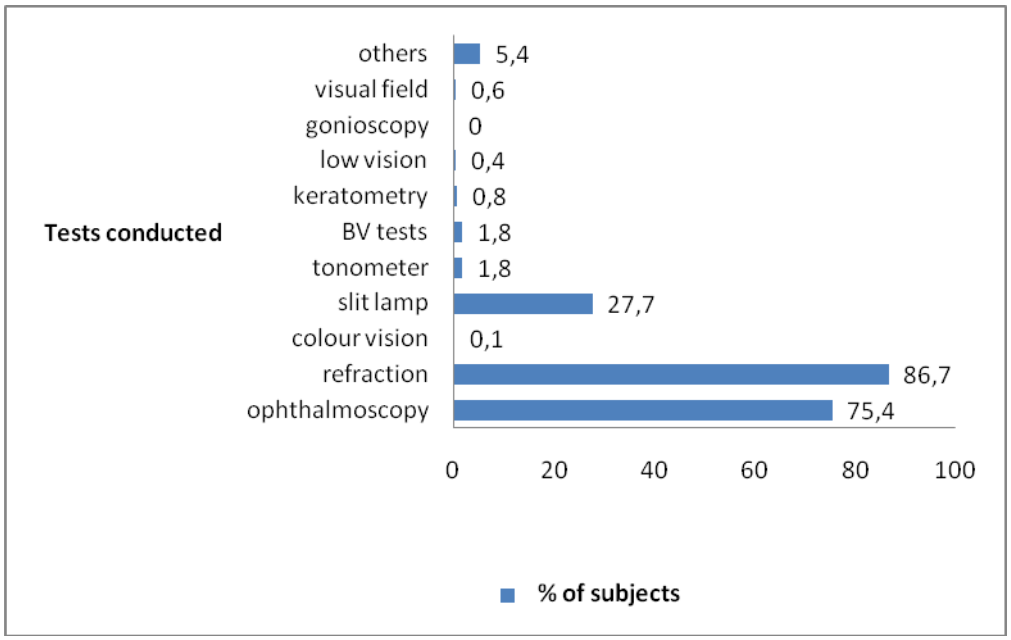

Figure 6: Showing the percentage of tests conducted on subjects.

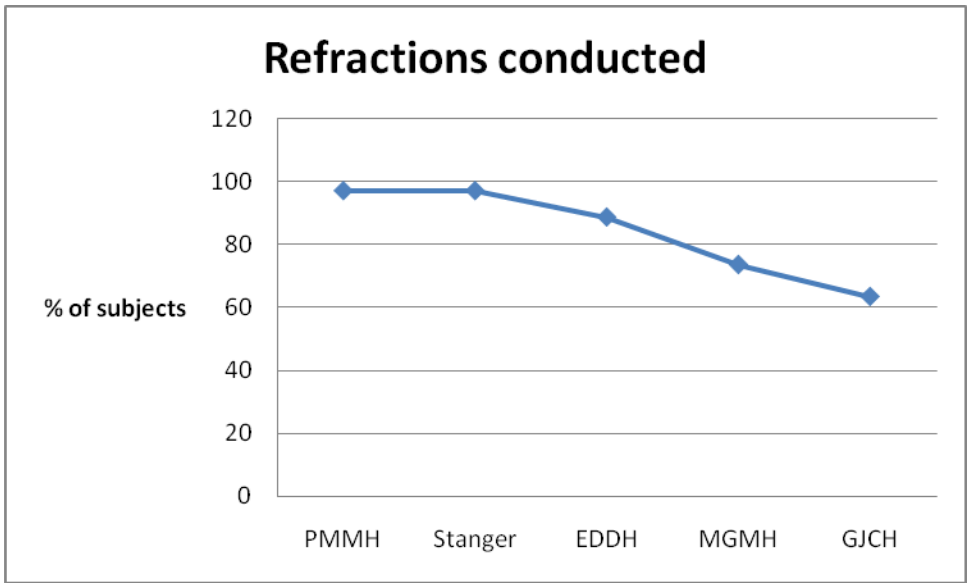

Figure 7: Percentage of refraction procedures conducted at the different hospitals.

Refractions were conducted more frequently at PMMH (88.4%) and Stanger Hospital (97.2%), followed by EDDH (88.8%). The lowest refraction frequency was recorded at GJCH (63.4%) followed by MGMH (73.6%). Presenting subjects were likely to be refracted when visiting optometric eye health facilities (p=0.000).

4.1.4 DIAGNOSIS AND MANAGEMENT STRATEGIES EMPLOYED

Approximately three quarters (74.2%) of subjects were diagnosed with refractive errors, followed by pathology, which was diagnosed in 29.5% of subjects. The remaining was diagnosed with binocular vision disorders (1.0%) and no abnormality detected (6.2%).

The majority (55.9%) of all subjects were managed with spectacles. Approximately a fifth (21.9%) was referred to an ophthalmologist and 18.9% were released without any treatment. The remaining patients were managed in the following manner (Figure 8):

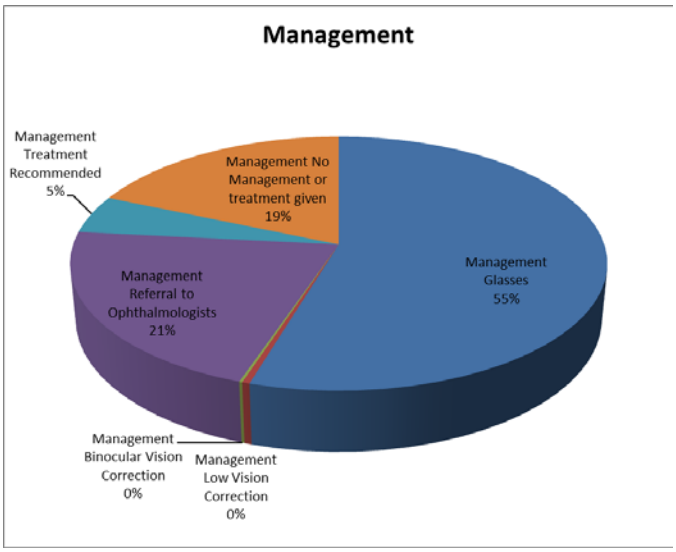

Figure 8: Showing the management strategies (%) used for the study subjects.

Pharmaceutical ocular treatment was recommended to 5.0%, low vision correction was given to 0.4% and 0.2% were prescribed binocular vision corrections.

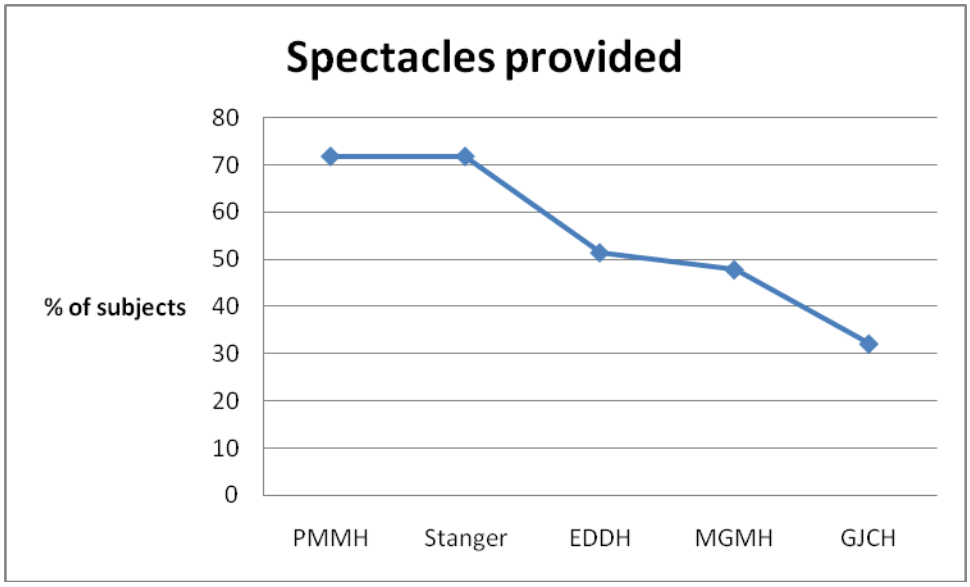

Figure 9: Showing the percentage of spectacles ordered by optometrists (%).

As shown in Figure 9, GJCH (32.1%) recorded the lowest orders of spectacles, followed by MGMH (47.8%) and EDDH (51.4%). Both PMMH (71.8%) and Stanger hospital (71.8%) had high spectacle orders. More spectacles were ordered for subjects attending PMMH and Stanger Hospital than any of the other facilities (p=0.000).

Table 1: Showing diagnosis and management of each of the presenting chief complaints in percentage and number.

Presenting chief complaints		**Reduced vision**	**BV**	**Pain**	**Trauma**	**Routine examination**	**Referrals**	**Others**
N (%)		2 435 (65.5)	43 (1.2)	96 (2.6)	49 (1.3)	60 (1.6)	432 (11.6)	601 (16.2)
DIAGNOSIS	Refractive error	2014 (74.0)	26 (1.0)	47 (1.7)	24 (0.9)	14 (0.5)	251(9.2)	347 (12.7)
	Pathology	657 (54.8)	7 (0.6)	50 (4.2)	20 (1.7)	6 (0.5)	191(15.9)	268 (22.3)
	BV Anomaly	17 (39.5)	20 (46.5)	1 (2.3)	0 (0.0)	0 (0.0)	4(9.3)	1(2.3)
	NAD	95 (39.6)	2 (0.8)	4 (1.7)	5 (2.1)	41 (17.1)	43(17.9)	50(20.8)
Management	Spectacles	1555 (77.2)	16 (0.8)	29 (1.4)	16 (0.8)	8 (0.4)	155(7.7)	235 (11.7)
	LV correction	11 (61.1)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	4(22.2)	3(16.7)
	BV correction	4 (50.0)	3 (37.5)	0 (0.0)	0 (0.0)	0 (0.0)	0(0.0)	1(12.5)
	Referred to ophthalmology	508 (57.5)	15 (1.7)	26 (2.9)	17 (1.9)	7 (0.8)	183(20.7)	128 (14.5)
	Pharmaceutical Treatment Recommended	85 (38.5)	3 (1.4)	18 (8.1)	5 (2.3)	0 (0.0)	25(11.3)	85(38.5)
	Discharged without treatment	365 (51.0)	7 (1.0)	26 (2.9)	13 (1.8)	43 (6.0)	103(14.4)	158 (22.1)

Of the subjects that presented with reduced vision, 82.7% were diagnosed with refractive errors, 27.0% were diagnosed with ocular pathology, 0.7% was diagnosed with binocular vision anomalies and 3.9% of them were found to have no abnormalities detected (NAD). Spectacles were ordered for 64% of these subjects, whilst approximately a fifth (20.9%) was referred to ophthalmologists and 15% were released with no treatment or management (NO).

Refractive errors were diagnosed in 60.5% of subjects that presented with binocular vision problems, 46.5% were diagnosed with BV anomalies and 16.3% with pathology. In addition, 4.7% were found to have NAD. Furthermore, approximately a third (37.2%) of patients that had BV complaints was managed with spectacles, 34.9% were referred to ophthalmologists for management and 16.3% were not given any treatment.

The majority of subjects that presented with pain were diagnosed with pathology (52.1%) and 49.0% were diagnosed with refractive errors. More than a quarter of the subjects (27.1%) were referred to ophthalmologists and the remainder was managed by the optometrists in the following manner: spectacles ordered (30.2%); pharmaceutical ocular treatment given or recommended (18.8%); released without treatment (27.1%).

Of all the subjects who presented with a chief complaint of trauma, less than a third (34.7%) was referred to an ophthalmologist whilst 65.3% were managed by optometrists.

Only 23.3% of subjects who came in for a routine examination were diagnosed with refractive errors and 68.3% had NAD. The majority of subjects (71.7%) were discharged without any

treatment. The majority (58.1%) of subjects who were referred from other health facilities was diagnosed with refractive errors, 44.2% were diagnosed with pathology and 10.0% had NAD. Spectacles were ordered for 35.9% of subjects referred and 42.4% were referred to ophthalmologists for further investigation.

A total of six hundred and one subjects (20.2%) presented with complaints other than those specifically listed on the patient record cards. The majority (57.7%) of those was diagnosed with refractive errors, 44.6% had pathology and 8.3% had NAD. Approximately a fifth (21.3%) of all these subjects were referred to ophthalmologists with the remainder being managed by the optometrists in the following manner: 39.1% were ordered spectacles, 14.1% were recommended ocular pharmaceutical treatment, 26.3% were discharged without treatment.

In total, only 21.9% of all subjects were referred to ophthalmologists for management whilst the remainder (78.1%) was managed by optometrists in the following manner: 55.9% were ordered spectacles; 18.9% were released with NO; 5.0% were recommended pharmaceutical treatment; 0.4% was given LV corrections; 0.2% was given BV corrections.

4.2 OPTOMETRISTS

4.2.1 PROFILE OF OPTOMETRISTS

Questionnaries were distributed to 18 optometrists and the response rate for the optometrist's questionnaires was 64.7%. The majority (90.9%) of optometrists were aged younger than 30 years with the majority (81.8%) being females and only 18.2% were males. More than half

(54.5%) of the optometrists had less than 5 years post-registration working experience, 36.4% had 5 to 10 years post qualification/registration working experience (PQR) and only 9.1% had more than 20 years of post-registration working experience. Only 18.2% are based in rural areas and 81.8% are based in urban and peri-urban areas.

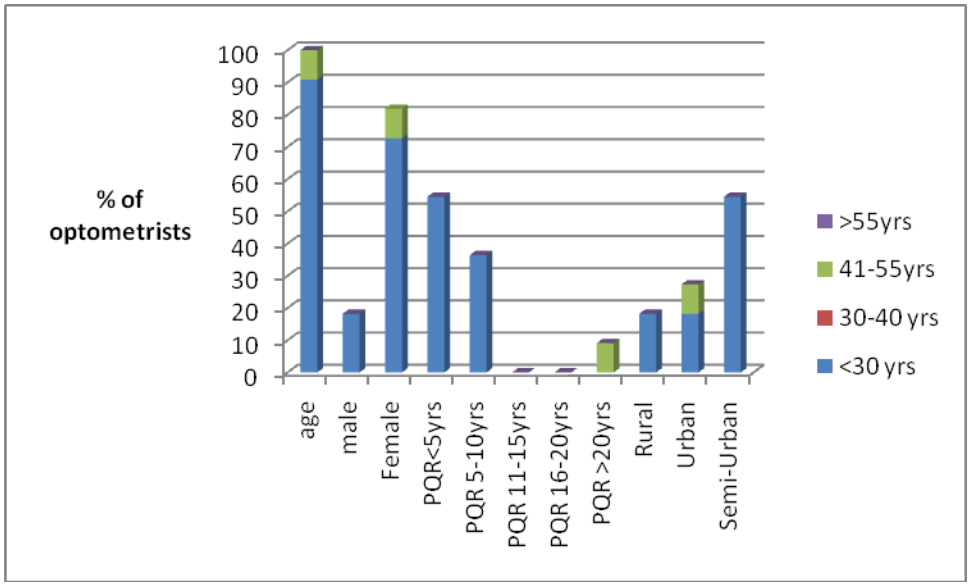

Figure 10: Showing the profile of optometrists (%) and age ranges.

None of the optometrists indicated to be working purely at supervisory level. All were either employed at the level of production only (54.5%) or both production and supervisory (45.5%).

4.2.2 OUTREACH SERVICES

The majority (54.5%) of optometrists reported conducting outreach services. The number of outreach facilities visited by each optometrist ranged from 3 to 10. Only optometrists based in rural and semi-rural areas reported rendering outreach services.

4.2.2.1 DISTANCE TO OUTREACH FACILITY

A third (33.3%) of the optometrists who conducted outreach services reported that their nearest outreach facility was less than 10km from their base hospital, another third reported that the nearest was between 10 to 30 km and the last third reported that the closest institution was more than 50km from their base hospital. Only 16.7% of these optometrists reported that the farthest outreach facility was less than 20km away from the base hospital whilst the remainder (83.3%) reported that the farthest was more than 50km away from their base hospital.

4.2.2.2 NUMBER OF PATIENTS SEEN AT OUTREACH FACILITY

A third (33.3%) of the optometrists reported that they examined less than 50 patients per month at their outreach facility, 50.0% reported that they examined 50 to 200 patients monthly and 16.7% reported that more than 200 patients examined each month.

4.2.2.3 WAITING PERIOD AT OUTREACH FACILITY

Of the optometrists who conducted outreach services, the majority (66.6%) reported that their referral waiting period from their outreach facility to their base hospital was less than one month, 16.7% had a waiting period of 1 to 3 months and 16.7% had a waiting period of

between 3 to 6 months. Half (50.0%) of the optometrists reported that the waiting period for patients to be seen at the outreach facility was less than 1 month whilst the other 50.0% reported that the waiting period at the outreach facility was 1 to 3 months.

4.2.2.4 NUMBER OF PATIENTS EXAMINED

Two thirds (66.7%) of optometrist reported that they examined more than 200 patients at their base hospital monthly and a third reported that less than 50 patients are examined monthly at their base hospital.

4.2.2.5 SERVICES PROVIDED AT OUTREACH FACILITY

Of the optometrists who reported that they provided outreach services, 83.3% reported that they did vision screening, refraction and ordered and dispensed spectacles at their outreach facilities. None of the optometrists reported that they did binocular vision or contact lenses services at the outreach facility. Only a third (33.3%) reported that they did pediatric optometry and only 16.7% provided low vision assessments at outreach facilities. None of the optometrist reported doing any ocular diagnostic procedures at outreach facilities.

4.2.2.6 REASONS FOR NOT PROVIDING SERVICES

Outreach facilities: the reason cited by 100% of the optometrists for not providing contact lenses services at outreach facilities was due to a lack of equipment. Similarly, a lack of equipment was also given as a reason for not providing the following services: binocular vision (83.3%), pediatric optometry (50.0%), low vision (50.0%), and ocular diagnostic procedures (66.7%). Time constraints was also given as reason for not providing the following services:

binocular vision (33.3%), refraction (16.7%), ordering and dispensing (16.7%), contact lenses (16.7%), pediatric ophthalmology (33.3%), ocular diagnostic procedures (66.7%) and low vision (16.7%) (Figure 11).

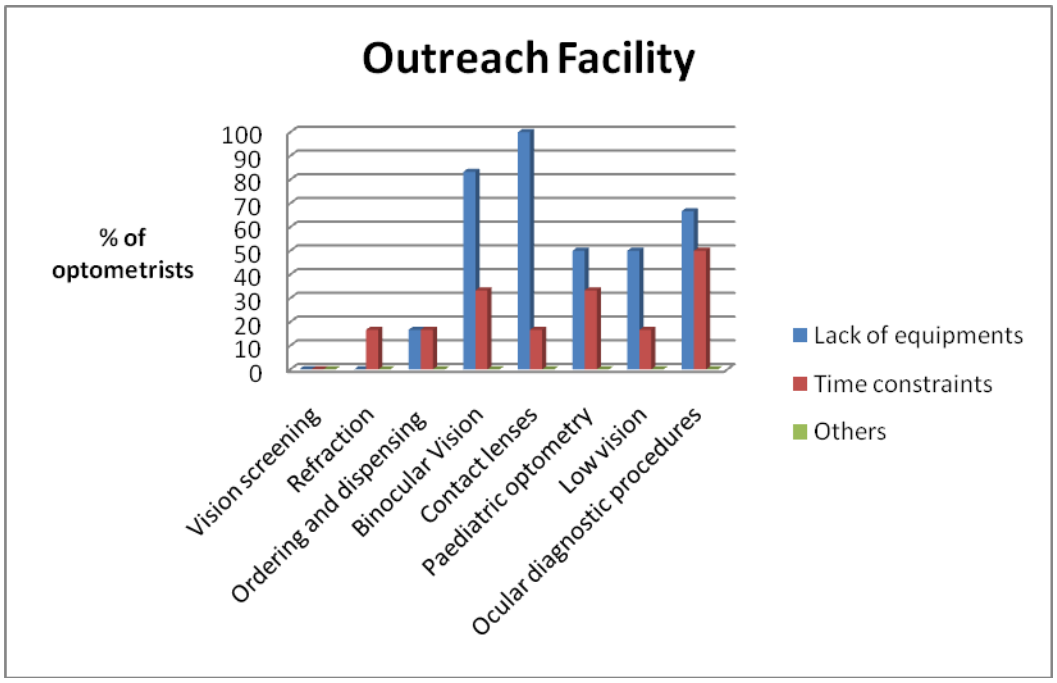

Figure 11: Reasons provided by optometrists (%) for services not provided at their outreach facility.

4.2.3 BASE HOSPITAL SERVICES

4.2.3.1 SERVICES PROVIDED

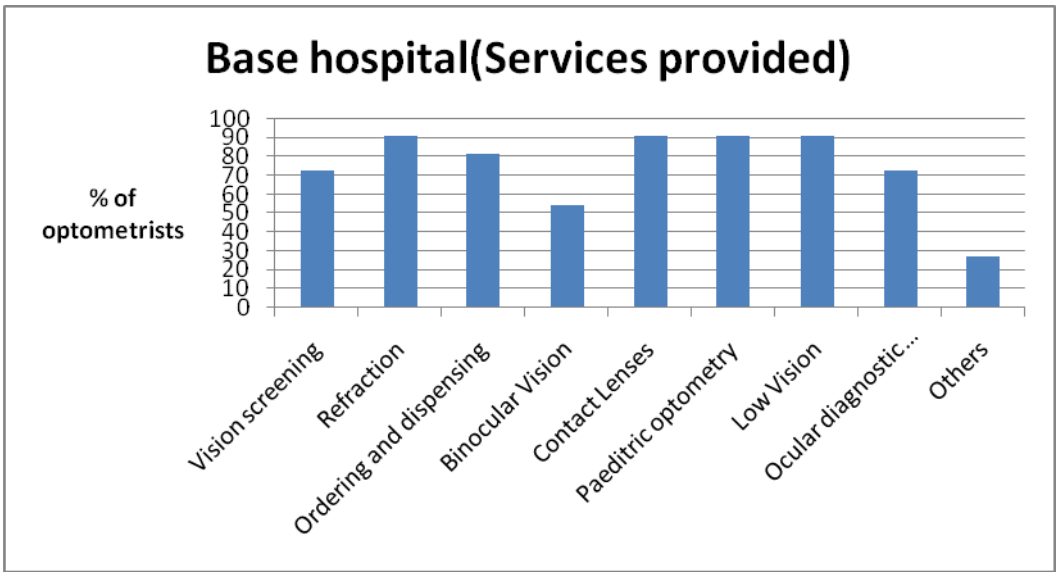

Figure 12: Showing tests conducted by optometrists(%) at Base hosptal

The reported services conducted at base hospitals were vision screening (72.7%), refraction services (90.9%) and ordering and dispensing of spectacles (81.8%). More than half (54.5%) of the optometrists reported that they conducted binocular vision testing at their facilities. Only 9.1% reported that they provided contact lenses services and 90.9% reported that they offered pediatric optometry and low vision services. More than two thirds (72.7%) reported that they practiced some ocular diagnostic procedures at their base hospital.

4.2.3.2 REASONS FOR NOT PROVIDING SERVICES

At the base hospital 81.8% of optometrists reported a lack of equipment as the reason for not providing contact lenses services and 36.4% of optometrists also mentioned a lack of

equipment as the reason for not providing binocular vision services. Time constraint was not mentioned as one of the reasons for not providing the other services at base hospitals

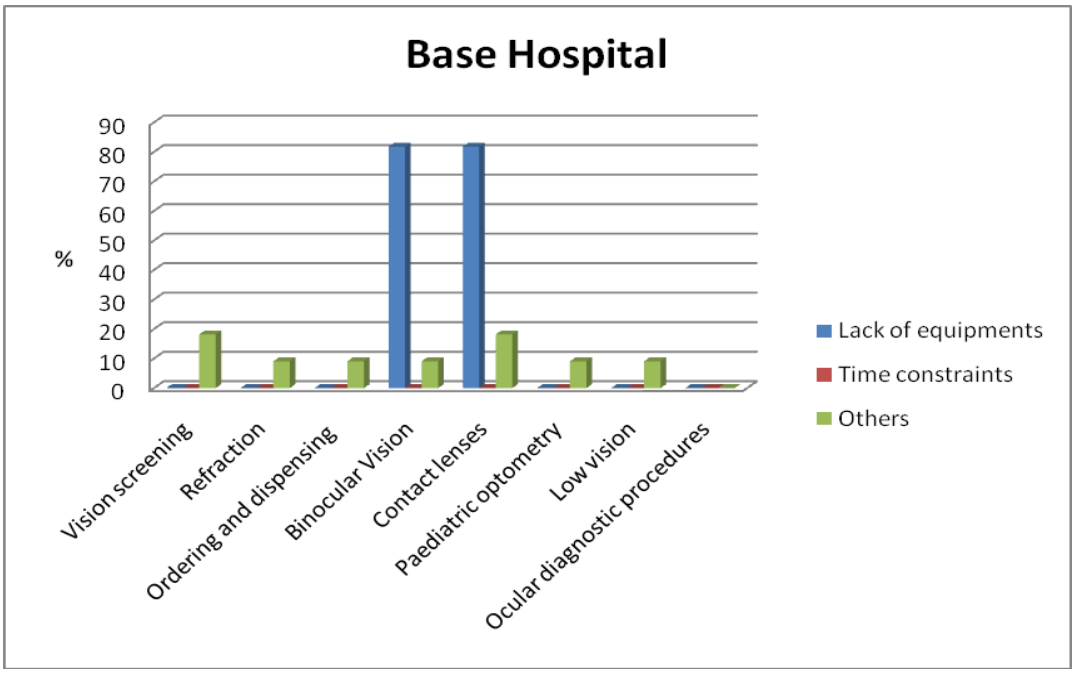

Figure 13: Indicating reasons provided by optometrists (%) for services not provided at their base hospital.

The pattern of services provided by optometrists employed at hospitals that employ both an ophthalmologist and optometrist appear to be similar to those provided at hospitals that employ optometrist only (Figure 13).

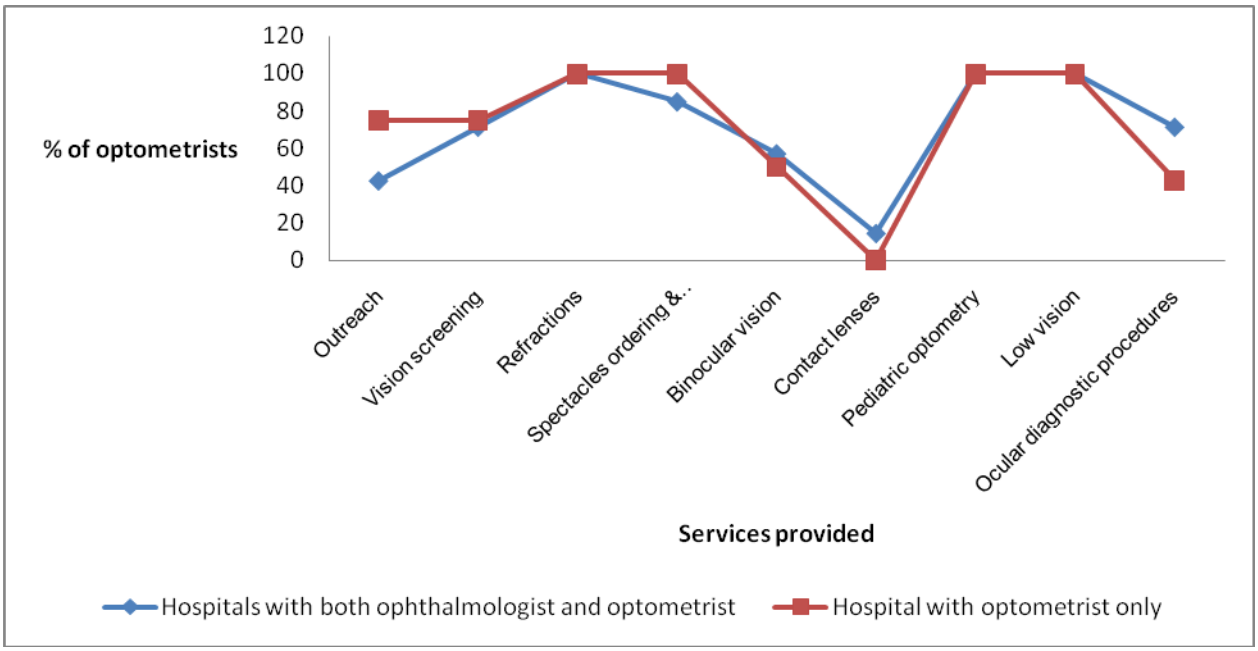

Figure 14: Showing the comparison of services provided at hospitals that employ both optometrist and ophthalmologist versus hospitals that employ optometrists only.

However, variations have been noted in relation to outreach services and ocular diagnostic procedures, as shown in Figure 13. Optometrists employed at hospitals that have an ophthalmologists conduct less outreach services (42.6%) as compared to those that employ optometrists only (75.0%) and also do more ocular diagnostic procedures than those that are based at hospitals that do not have ophthalmologist.

4.2.3.3 REFERRALS TO OTHER HEALTH CARE PROFESSIONALS

When asked about their referral frequency to general practitioners, 45.5% of optometrists responded that they referred once to a few times a week whilst 18.2% referred once a month, 18.2% never referred and the remainder referred only once in six months (9.1%) to general practitioners.

The majority of optometrist (90.9%) reported that they referred to ophthalmologists more than once a week whilst only 9.1% referred to an ophthalmologist only once a week.

When asked about referral frequency to private optometrists, 27.3% reported that they never referred their patients to private optometrists, 18.2% reported that they referred once in six months, 18.2% referred once a month and 18.2% referred once per week to private optometrists.

More than a quarter (27.3%) referred to other health professionals (OHP) more than once a week, 9.1% referred to OHP once a week and 9.1% referred once a month. Approximately a third (36.4%) referred to OHP once every 6 months and 9.1% reported that they never referred to OHP.

The conditions that were frequently referred for were as follows: 81.8% of optometrists reported that crystalline lens conditions were referred more than once a week. In addition, more than half (54.5%) of optometrists reported that glaucoma was referred more than once a week. The third most frequently referred conditions were: other anterior segment conditions, retinal conditions and binocular vision/pediatric conditions with 36.4% of optometrists reporting that they referred each of these conditions more than once a week.

4.2.3.4 EQUIPMENT

Most optometrists report that they have the standard optometry equipment at their base hospital. In contrast, most outreach facilities do not have a complete set of standard equipment/instrument as shown in Figure 14. None of the outreach facilities had a phoropter

whilst 63.6% of optometrists reported that they have a phoropter at their base hospital and only 18.2% of optometrists reported that they had a slit lamp at their outreach compared to 81.8% at base hospital.

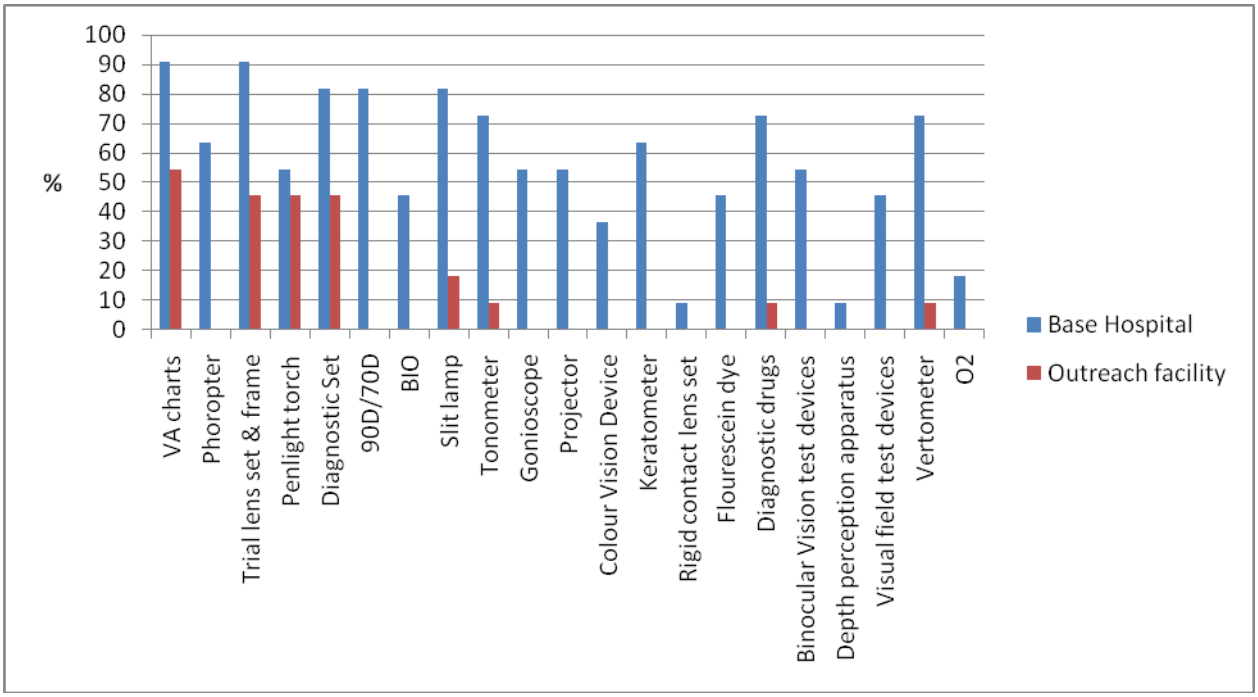

Figure 15: Showing comparison of availability of equipment at base hospitals and outreach facilities.

As shown in Figure 15, it has also been observed that hospitals that have both an ophthalmologist and optometrist employed appear to be better equipped than those that have only an optometrist employed.

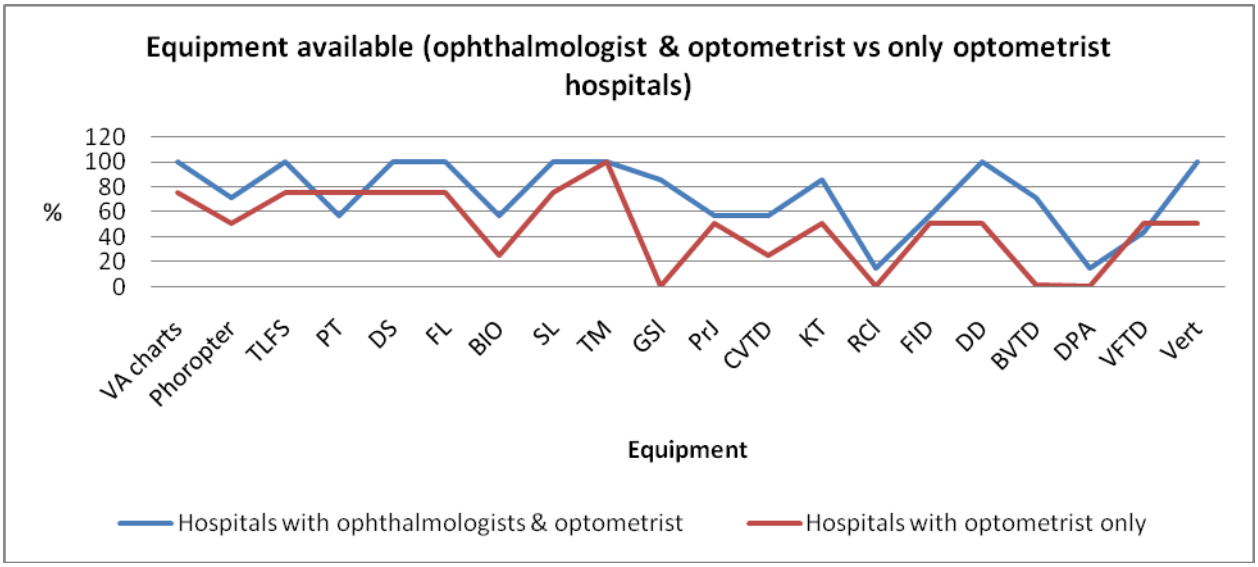

Figure16: Comparison of equipment available at hospitals that employ both an ophthalmologist and optometrist versus hospitals that have only an optometrist employed.

4.2.4 OPTOMETRY SCOPE EXPANSION

When asked about their knowledge of the proposed expansion of the scope of practice for optometrists, 72.7 % knew about the proposal and 27.3 % did not know. All optometrists (100%) agreed that optometrists should be able to prescribe ocular pharmaceuticals for treatment of anterior segment ocular diseases/conditions (OASC) and 90.9% thought that optometrists are adequately trained to diagnose OASC. When asked whether they thought optometrists are adequately trained to treat OASC, 81.8% agreed and 18.2% disagreed. All optometrists (100%) agreed that they would wish to use ocular pharmaceuticals to treat ocular diseases and also agreed that they would be interested to undertake further training to allow them to prescribe pharmaceutical medicines.

Table 2: Percentage of responses from optometrists to questions about scope expansion.

	Yes (%)	**No (%)**	**Don't know**
Knowledge of proposed scope expansion	72.7	27.7	-
Whether optometrists should be able to prescribe ocular drugs for the treatment of anterior segment diseases/conditions.	100	0	0
Adequacy of training of optometrists in diagnoses of anterior segment ocular diseases/conditions.	90.9	9.1	0
Adequacy of training of optometrists in treatment of anterior segment ocular diseases/conditions.	81.8	18.2	0
Whether optometrists would wish to use drugs to treat ocular diseases/conditions.	100	0	0
Whether optometrists would be interested to undertake further training to allow you to prescribe drugs.	100	0	0

4.2.5 Impact of ocular therapeutic agent prescription by optometrists

Approximately two-thirds (63.6%) of optometrists believed that more than 30% of their referrals might be avoided if they prescribe therapeutic agents (Figure 16).

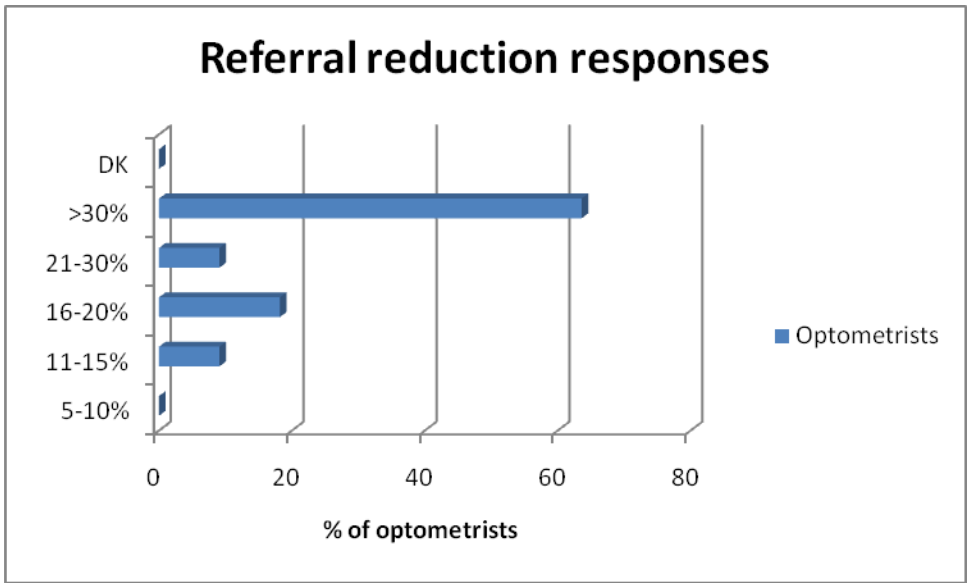

Figure 17: The optometrists perceived impact of ocular therapeutics on reduction of referrals.

The reported benefits of the scope expansion according to optometrists may be summarized as follows:

- Reduced number of consultation for ophthalmologists.
- Reduced costs for government e.g. transport of referred patients.
- Improved access to eye care services for patients.
- Early management of conditions.

CHAPTER 5: DISCUSSION

5.1 SUBJECTS (Patients)

5.1.1 PROFILE

5.1.1.1 GENDER

A total of two thousand nine hundred and sixty eight (*N*=2968) subjects were assessed and the majority of subjects identified in the study were females (67.6%) and 32.4% were males. Males usually have lower rates of health visits than females. This is corroborated by the Statistics South Africa 2011 report that revealed that across all race groups, females are more likely than males to have visited a health worker[38]. There is thus a need to establish the reasons for the lower uptake of eye health services amongst males as compared to females. The representation of males was higher in GJCH, followed by PMMH and Stanger hospital. Unemployment may be the reason why there is high representation of males in GJCH, as this hospital is based in Ugu municipality, a municipality with the highest unemployment rate amongst the districts studied. South Africa has a reported higher unemployment rate amongst females as compared to males in[39], therefore it can be assumed that in districts with a relatively lower unemployment rate, more males are employed and can afford private health care. Additionally, these male workers, due to work time constraints, cannot go to public health facilities to seek eye health services as these facilities only open during weekdays, when most employed people are at work.

5.1.1.2 RACE

Approximately three quarters (75.3%) of all subjects were Africans which is supported by the provincial demographics as 86.8% of the population of KwaZulu/Natal was defined as black in the recent census 2011[23]. Figure 3 shows a high representation of Africans at EDDH and high representation of Indians at MGHMH. The influencing factor could be the dominant racial groups residing in communities where these health facilities are based. EDDH is based at an African dominated township of Edendale and MGMH is located at a historically demarcated Indian township of Phoenix. Access to these institutions may be difficult for other racial groups as in some instances they may have to take two or more modes of transport which may be too costly. Access to the broader communities should be considered when planning these health facilities or, where certain services are offered, so that all communities within the catchment area have direct and cost effective access.

5.1.1.3 AGE

Although, South Africa had an intermediate age (median ages of 20 t0 29 years) in the past 2011 censuses of 25 years[23], this study revealed that the uptake of eye health services was low amongst this specific population group. A possible reason could be that more of these young adults are employed and unable to attend these public sector facilities or may have access to private facilities. However, eye health promotion initiatives targeting this group will need to be done to encourage the uptake of eye care services.

The government school health program could be a reason why there is a small representation of those who are aged below eighteen years. This group may have already been attended to at schools by health care workers who are part of the school health program.

Presbyopia and other systemic related ocular conditions could be the driving force behind the high percentage of older groups (forty years old and above) represented in the study. As life expectancy continues to grow in South Africa, there's a need to have an eye care plan to better respond to the eye health needs of this group. As revealed in Figure 4, the mean age is the highest at both PMMH and MGMH, and is lowest at EDDH. This may be due to the age distribution in the respective districts as eThekwini district has a slightly older population when compared to the other districts and both PMMH and MGMH are based in the eThekwini district and the rest are located in the other districts[31].

5.1.2 PRESENTING COMPLAINTS

Almost a third of all presenting complaints were due to reduced vision, with a small portion of subjects presenting to optometrists with pain, trauma etc. The majority (82,7%) of those that that presented with reduced vision was diagnosed with refractive errors. As shown in Figure 5, optometrists working at hospitals that employed ophthalmologists (PMMH, Stanger Hospital and EDDH) get a higher percentage of patients presenting with reduced vision compared to other hospitals that do not have a full time ophthalmologist (MGMH and GJCH). The reason for the high number of reduced vision complaints at PMMH, Stanger Hospital and EDDH, could be due to the "triage" or sorting system employed in the public sector where-by nurses, as the first contact health care workers, screen and direct patients to relevant eye care

personnel/professionals. Therefore, those patients complaining of reduced vision that improves with a pinhole are more likely to be referred to the optometrist whilst other complaints are referred to ophthalmologists. The same process could be used with other complaints like pain, trauma etc. If the facility has an ophthalmologist, patients who present with complaints (other than reduced vision) are more likely to be sent to an ophthalmologist. In hospitals where optometrists work independently (without ophthalmologists), they are more exposed to a variety of complaints.

5.1.3 TESTS

It was of concern that optometrists frequently did ophthalmoscopy and refraction only, ignoring other tests such as tonometry, colour vision, visual field tests, keratometry etc. as illustrated in Figure 6. These other tests are equally important to asses and pick up potentially blinding conditions such as early maculopathy. The reason for not doing these other tests was attributed to optometrists not having all the standard equipment needed to perform such procedures/tests as revealed by the interviews. Although optometrists and ophthalmologists work within the same unit and setting, each has their own equipment. Hence it is possible that some optometrists may not have access to the necessary equipment as they may be utilized by ophthalmologists only, whilst others may have the equipment in their facility but because the equipment does not belong to the optometry component they cannot utilize it without the permission of ophthalmologists. To provide optimal patient care at all times it is important that hospital management review the current equipment allocations and usage within eye departments to ensure easy access to all members of the eye care team.

As shown in Figure 7, optometrists at hospitals that have a full time ophthalmologist perform a high percentage of refractions as compared to their counterparts at hospitals that do not have an ophthalmologists employed due to the high number of presenting complaints of reduced vision. This could also be as a result of a more streamlined system being in place, where there is an eye care team as opposed to just an optometrist being employed.

5.1.4 DIAGNOSIS

As shown in Figure 8, a large number of those that are seen by optometrists are diagnosed with refractive errors which could be due to the high frequency of refraction tests performed. It should be noted that more than a quarter of those that presented with reduced vision complaints were also diagnosed with pathological conditions as well, illustrating that some refractive errors present with pathological conditions that patients may not have been aware of at the time of going to health facilities. A study by Naidoo et al also find high number of refractive errors[21]. This emphasizes the important role that optometrists can play in identifying other ocular conditions, including those that may be life threatening, e.g. tumours. This also illustrates the need for eye care campaigns to inform communities about the importance of regular eye assessments.

Referrals were the third highest reason for visits to the optometrist and more than half of those referred were diagnosed with refractive errors, further illustrating the void that has been filled by the employment of optometrists at these public sector facilities. Their contribution to the correction of refractive errors addresses a broader public health issue as refractive errors were identified as one of the leading causes of vision impairment[1]. Furthermore, a large portion of

those that presented with complaints other than the ones mentioned in the data collection sheet were managed by optometrists only, without being referred. These other complaints included amongst others: itchy eyes, swollen eyes, and redness. Hence optometrists should ensure that they practice their full scope at all times and not limit their practice to refraction only so that the other underlying conditions can be diagnosed and managed.

Hospitals that have ophthalmologists employed full time also have a high percentage of refractive errors presenting, which can be as a result of the general awareness of the public of the existence of a larger eye department and the effective referrals from the triage system.

5.1.5 MANAGEMENT

It is worrying that 35.0% of those that were diagnosed with binocular vision anomalies were referred to the ophthalmologist, suggesting that optometrist are not practicing binocular vision according to their trained competencies. This may additionally be due to the limited binocular vision testing devices available at the facility. This practice calls for the need to make resources available to optometrists for the diagnosis and management of binocular vision anomalies and for optometrists to be encouraged to attend continuous professional development offerings in binocular vision to ensure that they practice their full scope at all times.

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More than three quarters (78.1%) of all patients were independently managed by optometrists and the rest were referred (21.9%), again emphasizing the significant role played by optometrists in the delivery of eye care services. The optometrist reduced fourfold the

workload of ophthalmologist at these eye care facilities. The management of patients by optometrists will be expected to increase further when they begin to manage anterior segment diseases with medicines. This contribution is significant, considering the historically high workload of ophthalmologists at public hospitals and the demand and backlog of surgical procedures like cataract operations which was estimated to be 113000 with an incidence of 27000 new cataract blind per year among the rural population of South Africa[40].

Additionally, more spectacles are ordered at hospitals that have an ophthalmologist employed as compared to the hospitals that do not have an ophthalmologist. This may have been influenced by the adequate distribution of workload amongst the eye care team as opposed to facilities where optometrists have to work alone and deal with a wider range of complaints. Hospital management should work towards expansion of the eye departments to have both optometrists and ophthalmologists to ensure adequate workload distribution.

5.2 OPTOMETRISTS

5.2.1 PROFILE

5.2.1.1 AGE

It is encouraging to learn that most of the optometrists are relatively young as 90.1% were younger than 30 years old. This bodes well for the public sector as this means that these optometrists still have many working years to contribute before retirement. The investment (skills training) made in these professionals will benefit the country as the majority are early in their careers.

5.2.1.2 GENDER

More than three quarters of optometrists were females, and less than a quarter was males. Interestingly, a study by O A Oduntan conducted in 2006 on students completing their undergraduate education, males were reported to be twice as likely to work in a hospital as females when asked which mode of practice they would join upon completion. However the study also revealed that females were more risk averse than males as they showed less likelihood of opening their own practice[41]. This could therefore be one of the possible reasons why there is higher percentage of female than males in the study as females may be considering hospitals in the public sector to be the safer, less risky financial option. It will be beneficial that a profile of undergraduate students be conducted to determine whether there are more females than males entering the profession in general.

5.2.1.3 AREA

Of concern is that only 18.2% of optometrists were based in rural areas with the rest located in urban and semi-urban areas. This means that most optometrists are catering for communities that are more likely to already have greater geographical access to eye care services in the private sector. However, the presence of public sector optometrists in urban and semi-urban areas is still necessary to accommodate those communities who may be excluded due to inadequate financial access to the private eye care facilities. Therefore, there must be adequate distribution of public sector optometric services to meet the needs in both rural and urban areas catering for the majority of the population who cannot afford private eye care.

5.2.1.4 JOB TYPE

It should also be noted that none of the optometrists reported to be doing supervisory work only. This could be due to a lack of career growth paths available to optometrists within the public sector. This could potentially lead to a loss of skills to the private sector if the situation does not improve. Optometrists with the relevant abilities must be granted equal opportunities to take on supervisory/management posts in the hospitals and districts as part of their career development. There is thus a need for a plan to implement career growth paths for optometrists if retention and recruitment strategies are to succeed.

5.2.2 OUTREACH

The majority (83.3%) of optometrists reported that the furthest health facility they visit to conduct outreach services was more than 50km, leading to an improved access to health facilities that do not have optometry services. This intervention by optometrists thus serves to bring access to eye care services close to where the population resides. However, continuity of service must be investigated as these outreach services are only conducted on certain days of the week or month, due to optometrists being rotated to different institutions.

A permanent solution to address the inequity in the quality of eye care services delivered to rural communities is needed as there are fewer services offered at outreach facilities compared to base hospitals. Some of the reasons cited seem to be the lack of equipment at these outreach facilities as well as time constraints of visiting practitioners. There is a need to equip these facilities to enable optometrists to conduct comprehensive eye examination and ideally, to eventually convert these facilities into a full time eye care facilities. Facilities should

motivate for a full time optometrist post when the demand for eye care services increases as some patients wait for more than a month to see an optometrist at some of the outreach facilities.

Time constraints was not given as reason for not providing services at the base hospitals and yet was mentioned several times for not providing some of the services at outreach facilities, suggesting that time spent travelling to outreach facilities may be eroding on the time that may have been spent on providing services to patients. This further illustrates the need to have eye care services at these identified outreach facilities on a full time basis according to the population demographics.

Although the impact of optometry services has begun to impact on the eye care services delivery in more remote areas, it is imperative that the government works on expanding the network of eye clinic facilities to provide these communities with a comprehensive, sustainable service. This study has revealed the positive impact that a full time optometrist could potentially make in these remote areas. The current outreach services conducted by optometrists should thus be seen as a temporary measure.

5.2.3 REFERRALS

It has also been noted in the study that crystalline lens conditions were the most frequently referred with 81.8% of optometrists referring more than once a week. This may lead to an increase in demand for correction or management of these conditions i.e. cataract operations. Cataracts are one of the leading causes of vision impairment in rural parts of KwaZulu/Natal[42]

and has been identified as one of national health priorities[42]. The cataract backlog was estimated at 113000 of unoperated cataract blind-people and 27000 new cases of cataract per year[40]. Glaucoma was second most frequently referred condition with 54.5% of optometrists stating that they referred more than once a week for cases of glaucoma. In other parts of the world, optometrists have been proved to be capable of not only diagnosing but also managing this condition just like general practitioners would[16]. It is therefore recommended that in South Africa as well, optometrists are utilized to manage glaucoma as this will also help to fill the gap created by the shortage and under supply of medical doctors and ophthalmologists.

OASC and retinal conditions referrals followed with about a third (36.4%) of optometrists referring more than once a week. Some of the OASC are managed or co-managed by optometrists in other countries like the United Kingdom[44]. This helps as delayed treatment may lead to complications for conditions like uveitis where early diagnosis and management is vital. In some cases, due to the high cost of transport especially in remote areas, referring may lead to additional delays with treatment, increasing the risks of the patient acquiring complications. Again, the use of optometrists in the management of anterior segment diseases should be implemented.

There is evidence of some collaboration between optometrists and other health professionals e.g. ophthalmologists in inter-professional facilities. This benefits patients as complicated cases are referred for further diagnostic assessments and timely management, avoiding complications due to delayed referral. This is also beneficial to the optometrist as every co-managed referral presents a learning and experiential opportunity.

As stated above that ocular adnexal conditions, anterior segment conditions and glaucoma were among the most frequently referred conditions. Additional training for optometrists in management or co-management in some of these conditions may result in reducing the referral rate of these conditions to ophthalmologist as optometrists have been shown to be capable of diagnosing and managing glaucoma[16].

5.2.4 SERVICES

Currently optometrists offer eye care services including, amongst others, screening, refraction and measurement of intra-ocular pressure as well as low vision with accompanying ordering and dispensing of spectacles and optical devices. Patients diagnosed with common, minor anterior segment conditions e.g. blepharitis or conjunctivitis were managed or referred to medical doctors for treatment. Often, the optometrist recommended the appropriate medication to the consulting medical doctor when referring. This is also corroborated by the records which also revealed that in total, 5,0% of all cases were managed by optometrists in the form of ocular pharmaceutical treatment recommended. Hence, when adequately trained and certified to treat anterior segment diseases, these optometrists will improve the overall management of patients presenting with these minor conditions and allow the ophthalmologists to focus on the surgical backlogs. As shown in Figure 13, more optometrists employed at hospitals that also employ ophthalmologists conduct outreach services as compared to those that work at hospitals that employed an optometrist only. This may be due to the increased workload of optometrists at these larger eye care facilities, which generally also serve as referral hospitals to smaller referring hospitals. The high patient intake at these hospitals limit

the time that optometrists have to conduct outreach services, particularly because referral hospitals have a bigger catchment area than referring hospitals.

Optometrists employed at hospitals that also employ ophthalmologists reported doing more ocular diagnostic procedures as compared to their counterparts employed at hospitals that have optometrists only. This trend could be due to the lack of equipment available as hospitals that have ophthalmologists have more equipment than hospitals that do not have ophthalmologists (Figure 15). The is thus a need to have standard equipment available at all eye health facilities were optometrists are employed, in order to enable the optometrist to practice their full scope of profession and to deliver the same standard of care regardless of the type of health care facility.

Optometrists were also willing to go for further training in order to improve their existing scope of practice. They supported the availability of learning opportunities to keep themselves abreast with the changes that are happening in their profession in order to provide a more comprehensive care to their patients. Almost two thirds of optometrists (63.6%) felt that if they were permitted to use drugs to treat some ocular diseases, more than 30% of their referrals may be reduced. A reduction in referrals will result in reduced costs for the state as fewer patients will need transport to referral hospitals. The additional benefit for the state will be that the burden on the referral hospitals will be eased. Ophthalmologists, relieved of this additional workload, will have more time for surgical procedures like cataract operations as the optometrists can manage the common ocular ailments at the clinic and district facilities. It is thus evident that if the public sector optometrists are given more resources, they will contribute

to reducing the referral rate of patients, reducing the cost of eye care service delivery in the country.

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

The average life span in South Africa continues to rise, mainly attributed to the rollout of antiretroviral treatment (ART) and reduction in mortality rate[30]. An ageing population will have a direct impact on the health resources currently available. This compounded by the rise in conditions like diabetes and hypertension may put a strain in the current resources available for eye care. Diabetes is projected to double between 2000 to 2030 globally[45]. Diabetes and hypertension are known to be associated with conditions of the eye such as retinopathies, which can eventually lead to irreversible blindness. Proper planning to better respond to many of these ever increasing challenges facing the health system is essential.

Currently there are challenges in dealing with monitoring of ocular conditions like diabetic retinopathy as the current resources do not seem adequate to manage or prevent complication brought by these conditions. This study has highlighted the significant role played by public sector optometrists and that shifting certain tasks to non-physician personnel like optometrists should be considered in light of all these challenges.

As highlighted by the study, there is a need to improve access to eye care services especially to rural communities as most of the eye care professionals (Optometrist and Ophthalmologists) are based in urban areas within both private and public sectors. The study has shown that public sector optometrists can be better utilized to improve access to eye care services especially in rural areas as they have been adequately trained to deal with both refractive status, pathological and other eye related conditions. Since optometrists are usually the first point of contact for patients seeking eye health services, they can fit into the primary health

care level of service delivery. Integrating optometry in the primary health care level may be one of the practical ways in addressing eye health care challenges within the public sector, making eye health care easily accessible to all, irrespective of location or financial status. Additionally, the study shows that incorporating eye care into the primary health care system may aid in eradicating avoidable blindness and meeting the Vision 20/20 objectives.

Although South Africa has a shortage of Ophthalmologists, there are enough sufficiently trained optometrists to cater for the shortfall. It takes longer and costs much more to train an ophthalmologist as compared to an optometrist. There is a significant portion of the workload currently undertaken by ophthalmologists that fall within the scope of practice of optometrists. Utilizing this cadre of eye care worker more efficiently will result in addressing the low cataract surgery rate in South Africa as surgeons are spending much of their time performing non-surgical work (screening, refractions and administrations)[6]. Optometrists can help in significantly reducing the number of consultation for ophthalmologists, thus freeing them for much needed surgery time.

The challenge facing eye care delivery is that the majority of the work force is based in the private sector, servicing a tiny minority of the population. This calls for more effort to be placed into recruitment and retention strategies for optometrist in the public sector. The recruitment of more optometrists in the public sector will improve access to eye health care, especially to rural communities. It is possible to recruit optometrists as they are readily available and the costs of employment are less as compared to employing other eye care professionals e.g. ophthalmologists.

Eye care facilities also need to be equipped with the standard minimum equipment defined by the HPCSA[46] for eye care service delivery, so that patients can receive the best possible eye care at areas close to where they live.

It is also imperative that optometrists are continually trained and equipped with skills to manage the common eye ailments in their respective eye health care facilities. Universities should liaise with the practitioners to identify and offer up-skilling programs in all clinical areas. More collaboration is needed amongst all the eye care personnel including optometrists, ophthalmic nurses and ophthalmologists in the delivery of eye care services. The hospital can additionally serve as a good learning environment as a multidisciplinary platform for acquiring of a broad range of clinical exposure and knowledge.

There have been calls from some parts of the world for the scope of optometry to be expanded to include the use of therapeutics for treatment of ocular diseases. This was argued to be cost effective in the provision of eye care services, as the cost of referral back to hospitals for cases of uncertainty was more expensive than the standard hospital care[17]. In South Africa, the scope of optometry has recently been extended to include the use of therapeutic medicines for treatment purposes. The extension of the scope of optometry can also benefit patients in that treatment for common/minor eye conditions can be done at facilities closer to patients instead of being referred to ophthalmologists. This may aid in reducing the costs of transport and reducing the workload of overburdened doctors, ultimately improving access to eye health care.

The use of ocular pharmaceuticals must be incorporated into the university undergraduate programs. There is a need for optometrists who haven't been practicing ocular diagnostic procedures to go for further training and "refresher" courses to equip themselves with the necessary skills. Additionally, all optometrists must ensure that they enroll for the programs that will enable them to certify as "Therapeutically Trained" practitioners. The main beneficiary of all these initiatives will be the patients.

With optometrists having finally been granted a scope expansion by the HPCSA, patients will benefit as they will no longer have to take additional days off from work because their minor ocular diseases will be managed at their nearest eye facilities by the optometrist. The portion of the budget allocated for transporting of referrals may then be utilized for other services. As revealed by the study that waiting times at referral hospitals will be reduced as well as the surgery backlog decreased as doctors will have more time for much needed surgery than screening and consultation of patients.

There is a need to undertake a cost analysis of employment of optometrists within the public sector and to evaluate the impact thereof on the economy. Although this study did not focus on the rand value benefit for employment of optometrists, it can be argued that the public sector optometrists are underutilized when one looks at the services they currently provide compared to what they have been trained to provide. It is known that Africa in general and South Africa in particular faces many health challenges including a shortage of health or medical personnel. South Africa is struggling to train and retain enough doctors to keep up with the population health needs. On the other hand the country has other non-physician

personnel that, if utilized effectively, can contribute to alleviating the workload of the doctors and yield the desirable results. Task shifting in eye care may help the country to meet its national objectives. By giving more responsibilities to mid level health personnel like optometrists some of the national health objectives like eradicating avoidable vision impairment could be achieved. Utilizing optometrists for mainly refraction deprives the citizens of this country of comprehensive eye services that optometrists are capable to provide. Therefore this study supports optometrists providing comprehensive eye care services at all the health facilities. There is a need for innovative methods to be devised to better utilize this available cadre of eye health professionals for the benefit of all patients.

The NHI is currently being introduced in phases by the Department of Health. If optometry is included in the benefit package of the NHI it will result in improved access to optometry services to all South Africans irrespective of their income levels or their location. It may also help improve the distribution of optometry services to rural areas as this will incentivize the private sector to also open practices in rural areas thus reducing pressure on public health facilities.

Employment of optometrists who will practice their full scope within the public sector will benefit in the following ways:

- Improvement of access to eye care service delivery (especially to rural communities).
- Improved cost efficiency by reducing the number of unnecessary referrals to ophthalmologists.

- Early detection of potentially blinding eye conditions thus reducing avoidable vision impairment.

All these benefits highlight the impact that having adequate numbers of optometrists, practicing their full scope at public sector facilities will have on the eye care service delivery in the country.

LIMITATIONS

The identified limitations of the study were:

- No cost analysis of the impact for employment of optometrists.
- No specific diagnosis or reasons for referral identified in the study (Specific conditions encountered not recorded).
- A small sample of optometrists due to a limited number employed in the selected districts (18 optometrist).
- Only availability of equipment was established but access to equipment was not investigated.
- The study was limited to 4 districts in one province. The dynamics may be different at other districts and provinces.

CONCLUDING RECOMMENDATION

It is recommended that the various stakeholders (DoH, HPCSA, Education Institutions, and National Optometry Forum) come together and work on a plan that reviews the role and scope of practice of optometrists in the public sector based on a needs assessment. The results of this study can also be utilized to inform this process.

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CHAPTER 8: APPENDICES

APPENDIX 1- Data collection form.

APPENDIX 2- Questionnaire for optometrists.

APPENDIX 3- Letter of Approval to conduct a study from the Department of Health Provincial Office.

APPENDIX 4- Consent form and information document

APPENDIX 5- Abbreviation/ Acronym

Appendix 1

Study Number	Age	Gender		Race					Chief Complaint							Test Conducted											Diagnosis				Management					
		F	M	AF	W	As	C	O_1	↓V	BV	P	T	R	Rf	O_2	OS	Rf	CV	SL	Tm	BVt	K	LV	G	VF	O_3	Re	Pc	BVa	Nad	Gl	LVc	BVc	RO	TR/R	NO

Gender	Race	Chief Complaint	Test Conducted	Diagnosis	Management
F -Female **M -**Male	**A-**African **W-**White **As-**Asian **C-**Coloured **O1-**Other Race	**↓V-**Reduced Vision **BV-**Binocular Vision Anomalies **P-**Pain **T-**Trauma **R-**Routine **Rf-**Referrals **O2-**Other Chief Complaint	**OS-** Ophthalmoscope **Rf-** Refraction **CV-** Colour Vision **SL-** Slit-lamp bio microscopy **Tm-**Tonometry **BVt-**Binocular Vision Tests **K-** Keratometry **LV-** Low Vision Assessments **VF-** Visual Fields **G-** Gonioscopy **O3-** Other Tests	**Re-** Refractive Error **Pc-** Pathological Condition **BVa-**Binocular Vision Anomalies **Nad-** No abnormality detected	**Gl-** Glasses **LVc-**Low Vision correction **BVc-**Binocular Vision Correction **RO-** Referred to Ophthalmologists **NO-** No Treatment/ Referral/ Correction given

Appendix 2: Questionnaire for Optometrists

Code:

A. Demographic Profile					
1. Age	*<30*	*30-40*	*41-55*	*55-65*	*>65*
2. Gender	*Male*		*Female*		
3. Post qualification experience	*<5years*	*5-10years*	*10-15 yrs*	*16-20 yrs*	*>20yrs*
B. Work Profile					
4. Location of work-place	*Rural*	*Urban*	*Semi-urban*		
5. Job Type	*Production*	*Supervisory*	*Both*		
OUTREACH SERVICES					
6. Do you conduct outreach services	*Yes*	*No*			
If yes to No 8, please answer question 9 to 15.					
7. If yes how many health institutions do you visit?					
8. Roughly how far in kilometres is the nearest health institution you visit as part of the outreach services?	*<10*	*10-20*	*21-30*	*31-40*	*41-50*	*>50*
9. Roughly how far in km is the farthest health institution you visit as part of outreach services?	*<20*	*20-30*	*31-40*	*40-50*	*>50*
10. How many patients do you see on outreach visits monthly?	*<50*	*50-100*	*101-150*	*151-200*	*>200*
11. What is the referral waiting period? How long do patients have to wait (to go to base hospital) after being examined at the outreach clinics?	*<1 month*	*1 to 3 months*	*3 to 6 months*	*>6 months*	*Don't Know*
12. Patient's average referral waiting period after being referred from outreach hospital.	*<1 month*	*1 to 3 months*	*3 to 6 months*	*>6 months*	*Don't Know*
13. Average waiting period for patients to get an appointment to see the optometrist at outreach institution.	*<1 month*	*1 to 3 months*	*3 to 6 months*	*>6 months*	*Don't Know*
14. Average waiting period for patients to get an appointment to see the optometrist at base hospital.	*<1 month*	*1 to 3 months*	*3 to 6 months*	*>6 months*	*Don't Know*
15. How many patients do you see at base hospital?	*<50*	*50-100*	*101-150*	*151-200*	*>200*

16. SERVICES RENDERED:				
Do you render the following optometry services?	*At Base Hospital*		*At Outreach Health Institutions*	
	YES	*NO*	*YES*	*NO*
1. Vision Screening				
2. Refractions				
3. Ordering and dispensing of Spectacles				

				Initials
4. Binocular vision				
5. Contact lenses				
6. Paediatric Optometry				
7. Low Vision				
8. Ocular diagnostic procedures				
9. Other services please specify				
Reasons for not providing any of the above-mentioned optometry services. **1= *Lack of equipment*** **2= *Not interested*** **3= *Time constraints*** **4=*Do not feel competent enough*** **6= *other (write reason in block)***	*At Base Hospital*		*At Outreach Health Institutions*	
1. Vision Screening				
2. Refractions				
3. Ordering and dispensing of spectacles				
4. Binocular vision				
5. Contact lenses				
6. Paediatric Optometry				
7. Low Vision,				
9. Ocular Diagnostics				

REFERRALS

17. How often do you refer to the following? (Mark with X):	*A few times a week*	*Once a week*	*Once a month*	*Once in 6 months*	*Never*
i. General practitioners					
ii. Ophthalmologists					
iii. Private optometrists					
iv. Other health professionals					

18. How often do you refer for the following conditions?	*A few times a week*	*Once a week*	*Once a month*	*Once in 6 months*	*Never*
i. Ocular adnexal conditions					
ii. Keratoconus					
iii. Other Anterior segment conditions					
iv. Glaucoma					
v. Crystalline lens conditions					
vi. Vitreous body Conditions					
vii. Retinal conditions					
viii. Low Vision Conditions					
ix. Binocular Vision/Paediatric Conditions					

	Initials	

EQUIPMENT (TICK THE EQUIPMENT AVAILABLE AT THE SITE)

	Base Clinic	**Outreach**
VA Charts (distance and near)		
Phoropter		
Trial lens set and Trial Frame		
Penlight Torch		
Ophthalmoscope and Retinoscope Set		
90D/70D Lens		
BIO		
Slit Lamp		
Tonometer		
Gonioscope		
Projector		
Colour Vision Test Devices		
Keratometer		
Rigid Contact Lens Trial Set		
Fluorescein dye		
Diagnostic Drugs (e.g. atropine, mydriacyl, anaesthetic)		
Binocular vision test devices e.g. Prism Bar, Maddox wing, Worth four dot test		
Depth perception apparatus e.g.Lang, Randolt, Titmus; Titmus stereo tests		
Visual field tests devices e.g. Tangent; HVFA; Amsler grid etc		
Vertometer		
OTHER:		

C. PROPOSED EXPANSION OF THE SCOPE OF PRACTICE FOR OPTOMETRISTS

The HPCSA in November 2009 approved the proposal from the Professional Board to expand the scope of practice to include the treatment of ocular diseases.

19. Do you know about this proposed scope expansion?	*Yes*	*No*	
20. Do you agree that optometrists should be able to <u>prescribe</u> ocular drugs for treatment of anterior segment diseases?	*Yes*	*No*	*Don't know*
21. Do you think optometrists are adequately trained to be able to <u>diagnose</u> anterior segment ocular diseases?	*Yes*	*No*	*Don't know*
Please elaborate on your answer			
22. Do you think optometrists are currently adequately trained to be able to <u>treat</u> anterior segment ocular diseases?	*Yes*	*No*	*Don't know*

				Initials	
Please elaborate					
23. Would you personally wish to use drugs to treat ocular diseases?	*Yes*		*No*	*Don't know*	
24. What conditions do you think optometrists should be allowed to treat?	**i.** **ii.** **iii.** **iv.** **v.**				
25. Which conditions do you think optometrists should manage in the following ways?	*Independently treat*	*Co-manage with GPs and Ophthalmologist*	*Initiate treatment and refer.*	*Not treat*	
Please list conditions in the relevant columns.					
26. Would you be interested to undertake further training to allow you to prescribe drugs?	*Yes*		*No*	*Don't know*	
27. What percentage of all your referrals might be avoided if you could prescribe therapeutic agents?	*5-10%*	*11-15%*	*16-20%*	*21-30%*	*>30%*	*Don't know*
28. In what way do you think the expansion of scope of optometry is going to benefit the delivery of eye care services in the public sector?						

…….
Signature of participant

…….
Date

……..…
Researcher (Print)

…….
Date

……
Signature

health

Department:
Health
PROVINCE OF KWAZULU-NATAL

Health Research & Knowledge Management sub-component
10 – 103 Natalia Building, 330 Langalibalele Street
Private Bag x9051
Pietermaritzburg, 3200
Tel.: 033 – 3953189
Fax.: 033 – 394 3782
Email.: hrkm@kznhealth.gov.za
www.kznhealth.gov.za

Reference : HRKM 070/13
Enquiries : Mr X Xaba
Tel : 033 – 395 2805

Dear Mr ME Maake

Subject: Approval of a Research Proposal

1. The research proposal titled **'An evaluation of the Optometric services provided within eThekwini and the surrounding health districts in KwaZulu Natal'** was reviewed by the KwaZulu-Natal Department of Health.

   The proposal is hereby **approved** for research to be undertaken at eThekwini, iLembe, Ugu and uMgungundlovu districts.

2. You are requested to take note of the following:
   a. Make the necessary arrangement with the identified facility before commencing with your research project.
   b. Provide an interim progress report and final report (electronic and hard copies) when your research is complete.

3. Your final report must be posted to **HEALTH RESEARCH AND KNOWLEDGE MANAGEMENT, 10-102, PRIVATE BAG X9051, PIETERMARITZBURG, 3200** and e-mail an electronic copy to hrkm@kznhealth.gov.za

For any additional information please contact Mr X. Xaba on 033-395 2805.

Yours Sincerely

Dr E Lutge

Dr E Lutge
Chairperson, Health Research Committee
Date: 01/05/2013.

APPENDIX 4: Information document

University of Kwa-Zulu-Natal

Project Title: An Evaluation of the Optometric Services Provided within the eThekwini and the surrounding health districts in Kwa Zulu-Natal, South Africa.

Researcher: Maake ME
Supervisor: Moodley VR

Purpose of the study
The purpose of the study is to evaluate the services rendered by optometrists in the public sector in South Africa (specifically Kwa-Zulu-Natal province). The study seeks to establish whether optometrists are adequately utilised to address the eye care challenges within the public health institutions with the aim of addressing challenges that may be faced.

What is involved in the study
The questionnaire will involve responding to a questionnaire that will take approximately 25 minutes to complete.

Risks
There are no risks involved in this study. The content of the questionnaire will not present any risk or psychological discomfort to the participants.

Confidentiality
No participant or hospital will be identified by name but all will be allocated codes to ensure anonymity and access to the collected data will be restricted to persons directly involved in the research.

Right to withdraw
You are under no obligation to participate in the study and can withdraw at any time during the study, even after you have agreed to participate.

If you have any questions or concerns about the study you may contact:
Mr ME Maake at 031 502 1719 extension 2157 or 072 123 1996, Ms VR Moodley at 031 260 7352.

If you have any complaints or problems with the research study contact:
Ms Phumelele Ximba, HSSEC, University of KwaZulu-Natal. Ph: 031-260.

APPENDIX 4….: Consent form

Consent to participate in research

Study title: An Evaluation of the Optometric Services Provided within the eThekwini and the surrounding health districts in Kwa Zulu-Natal, South Africa.

I ……hereby confirm that I have been requested to participate in a research study on the An Evaluation of the Optometric Services Provided within the eThekwini and the surrounding health districts in Kwa Zulu-Natal, South Africa. I have read the briefing document provided and the contents thereof.

I confirm that I am voluntarily participating in the study and understand that all information will be kept confidential and that at no time will I be identified in the presentation of the results. Furthermore, I am aware that I have the right to refuse to participate or terminate my participation at any point.

I am aware that should I have any queries, or if I have questions about my rights as a research participant, I may contact Mr ME Maake at 031 502 1719 extension 2157, Ms VR Moodley at 031 260 7352, or Ms Phumelele Ximba, Humanities and Social Sciences Research and Ethics Committee (HSSEC) on 031 260 3587.

_____ _____

Signature of Participant Date

_____ _____

Signature of Witness Date

APPENDIX 5

Abbreviation / Acronym

MSVI-	Moderate and severe vision impairment
CSR-	Cataract surgical rate
HPCSA-	Health Professions Council of South Africa
VOSH-	Voluntary Optometry Services to Humanity
SSA-	Sub-Saharan Africa
WHO-	World Health Organisation
NGO-	Non Governmental Organisation
USA-	United States of America
UK-	United Kingdom
NHI-	National Health Insurance
PHC-	Primary Health Care
SPSS-	Statistical Packages for Social Sciences
HSSEC-	Humanities and Social Sciences Research Ethics Committee
GJCH-	GJ Crooks Hospital
MGMH-	Mahatma Gandhi Memorial Hospital
EDDH-	Edendale Hospital
PMMH-	Prince Mshiyeni Memorial Hospital
NAD-	No Abnormality Detected
NO-	No management/treatment provided
BV-	Binocular Vision
LV-	Low vision

PQR-	Post Qualification/Registration working experience
OHP-	Other Health Professionals
BIO-	Binocular Indirect Ophthalmolscope
O2-	Other equipment
VA Charts-	Visual Acuity charts
TLFS-	Trial lens set and trial frame
PT-	Penlight torch
DS-	Diagnostic set (Ophthalmoscope &retinoscope)
SL-	Slit lamp biomicroscope
TM-	Tonometer
GSc-	Gonioscope
PrJ-	Projector
CVTD-	Colour vision testing devices
KT-	Keratometer
RCl-	Rigid contact lenses
FlD-	Flourescein dye
DD-	Diagnostic Drugs
BVTD-	Binocular Vision Testing Devices
DPA	Depth Perception Apparatus
VFTD-	Visual Field Testing Devices
Vert-	Vertometer
OASC-	Other Anterior Segment Conditions
ART-	Antiretroviral Treatment

SPSS-	Statistical Packages for Social Sciences
HSSEC-	Humanities and Social Sciences Research Ethics Committee
DoH-	Department of Health