A STUDY OF THE PREVALENCE OF REFRACTIVE ERRORS AND OF PATIENTS REQUIRING REFRACTIVE SERVICES AT 15 EYE CLINICS IN THE AMATHOLE, CHRIS HANI, JOE GQABI and OR TAMBO DISTRICTS OF THE EASTERN CAPE

By

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DECLARATION

I, Fiona Webber declare that:

The research reported in this dissertation, except where indicated, is my original work. This dissertation does not contain other person’s data, graphs or information, unless specifically acknowledged as being sourced from other persons.

Signature…………………….. Date……………………..
DEDICATION

This dissertation is dedicated to the memory of my father, Chris McConnachie who taught me that anything and everything is possible with a bit of honest to goodness hard work.
ACKNOWLEDGMENTS

I would like to express my deepest appreciation to the following people for helping me with my dissertation:

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ABSTRACT

Introduction

This is a study on the prevalence of refractive errors and patients requiring refractive services at 15 eye clinics in the Amathole, Chris Hani, Joe Gqabi and OR Tambo District Municipalities of the Eastern Cape. This is an area characterised by extreme poverty where the cost of an eye examination and prescription spectacles remains financially unobtainable for most. Optometry services are provided mainly by private optometrists who service the small proportion of the population that can afford them. Adults and children remain house bound or are labelled as dull and unproductive simply because they don’t have access to an eye examination and a pair of spectacles.

Purpose

The purpose of the study is to identify patients with refractive errors and those requiring refractive services at the 15 eye clinics in the Eastern Cape. Another purpose is to describe the refractive services that are available to patients attending health facilities, where the eye clinics are conducted. Lastly, the purpose is to explore the possibility of nurses providing refractive services independently or under the supervision of optometrists to supplement the lack to refracting and dispensing services.

Study Method

A quantitative and qualitative non-experimental descriptive design was used. Research involved the analysis of Vision Care’s eye clinic records collected from 15 eye clinics from January 2010-June 2010. Semi-structured interviews were conducted with 30 nurses working at the 15 health facilities where the eye clinics were conducted using purposive sampling. The quantitative data was analysed using excel spreadsheets and graphs and qualitative data was analysed using coding and categorizing methods.

Conclusion

According to Vision Care’s data of the patients assessed, 19.2% had a refractive error and 54% of the patients required refractive services. It is estimated that 71.41% of the patients had a refractive error according to the optometrist. Although there were some organisations active in the eradication of cataracts, there was little healthcare available in the form of refraction services.
Patients needed to travel an average of 63.8kms to access refraction services against the backdrop of poor roads, poverty and unemployment. 28 out of 30 nurses either ‘strongly agreed’ or ‘agreed’ that nurses could be trained to perform refractions and dispense spectacles. 29 out of 30 nurses thought that this would have a positive impact on eye care. Further research is necessary to assess the feasibility of implementing a nurse operated refractive program and whether it should be within their scope of practice to refract and dispense spectacles.
CHAPTER 1

INTRODUCTION

1.1 Introduction and background

Vision is a sense that many people take for granted but according to International Centre for Eye Care Education (ICCEE) and the World Council of Optometry at least 670 million people living in the developing world are blind or vision impaired because they don’t have access to a basic eye examination and a pair of spectacles (Mail and Guardian, 17.9.2010). In many cases this is an unnecessary disability that has a major impact on people’s lives and causes profound economic disadvantages to individuals, families and communities.

According to Helen Keller International (HKI) (2010) an estimated 153 million people around the world have uncorrected refractive errors more commonly known as near-sightedness, far-sightedness and astigmatism, 90% of all people with uncorrected refractive errors are living in low and middle income communities. The HKI estimate does not include near vision impairment which was estimated to affect 517 million in 2005. (Holden, Fricke & Naidoo, 2008). According to HKI, those persons living with an uncorrected refractive error cannot achieve their full academic or vocational potential without appropriate vision correction.

These alarming statistics are mirrored by the situation in the Eastern Cape. One organisation, Vision Care, has dedicated itself to improving the eye health of the population. Vision Care, is a section 21 ‘non profit’ eye care facility in Mthatha, Eastern Cape that was established in 1985 and registered in 1991. Vision Care’s Constitution states that Vision care’s specific objectives are to provide quality eye care for people in Transkei, work in association with the Department of Ophthalmology of Umtata, support research into the prevention of blindness and the restoration of sight and to improve the quality of life of the blind. (Constitution of Vision Care, Transkei, 1989)

The proceeds made from paying clients attending the practice in Mthatha subsidise free eye clinics to 15 poor, indigent communities in rural areas of the Eastern Cape.
This study is partly based on the work of Vision Care which has been operating from Mthatha for 26 years. This study is aimed at solving some of the pervasive problems and challenges that Vision Care has encountered over the past two and a half decades. The eye clinics conducted by Vision Care provide an opportunity for the optometrist to identify patients with eye pathology. These patients are then referred to an ophthalmologist for further treatment and assessment. The optometrist is able to assist patients on the spot who have a simple refractive error with a pair of clinic glasses for a nominal fee. Those are the patients that put on a pair of clinic glasses and can immediately see better. Clinic glasses are cheap ready made spectacles that have the same power in both lenses and come in standard strengths.

Patients that require a full refractive service are the patients with less straightforward refractive errors or that need a full refractive service to identify the problem area, whether it be refractive or pathological. The clinic environment does not afford the optometrist the time, equipment or resources to perform a full refractive service so only patients with a basic refractive error can be assisted. This research, therefore, is a study of the prevalence of refractive errors (patients who are immediately assisted with a pair of clinic glasses) as well as a study of patients requiring refractive services at the clinics.

The Amathole, Chris Hani, Joe Gqabi and O.R. Tambo District Municipalities of the Eastern Cape make up much of what was known as the Republic of Transkei. The Republic of Transkei was a Bantustan (an area set aside for separate development) under the previous dispensation. This research focuses on a region of the Eastern Cape that formed part of the former Transkei. It is particularly impoverished due to the underdevelopment that took place during the apartheid years. The area is over populated and relies heavily on subsistence farming.

Statistics South Africa Community Survey 2007 found that, 73% of the respondents from Amathole District Municipality had a monthly income of R800 or less. These results were similar to those of Chris Hani District with 79%, Joe Gqabi at 67% and O.R. Tambo the highest with 82%.
The Amathole District Municipality lies at the heart of the Eastern Cape Province and is presently home to 1.7 million people. Two-thirds of this district falls under the former homelands of Transkei and Ciskei and this is where basic services backlogs such as sanitation, electricity, mud schools and poor roads are most acute.

The Chris Hani District Municipality has a population of close to 900,000 people. The majority of this population is rural and living in the former homeland areas of Transkei and Ciskei. Poverty is estimated to be more than 70% with the unemployment rate over 58%.(Province of the Eastern Cape Social Development, 2010) At the United Nations World Summit on Social Development, the ‘Copenhagen Declaration’ described poverty as “a condition characterized by severe deprivation of basic human needs, including food, safe drinking water, sanitation facilities, health, shelter, education and information.”(What is poverty? 2011)

The Joe Gqabi District municipality is one of the 13 poorest, poverty stricken districts of South Africa with an estimated population of 341 339. The Census of 2001 indicated that based on annual household income, over 86% of the population in this area lives in poverty.

The O.R. Tambo District Municipality has a population of about 1.7 million and is the poorest district in the Eastern Cape. The literacy rate is estimated at 42.2% and unemployment at 65.6%. Most of the population resides in rural areas. (Province of the Eastern Cape Social Development, 2010)
This map numbers all the district municipalities within South Africa (Districts of South Africa, 2010)

Figure 1

9 Amathole District municipality
10 Chris Hani District municipality
11 Joe Gqabi District municipality
12 O.R. Tambo District municipality

The total population of the Amathole, Chris Hani, Joe Gqabi and O.R. Tambo District municipalities is an estimated 4.64 million. Large portions of the area are served by poor roads and poverty is endemic. Eye services are mainly provided by private optometrists that have set up practices in some of the rural towns. In 2010, the average cost for an eye examination and a pair of prescription spectacles at a private optometrist was approximately R800. These costs were obtained from Vision Care. For most people in the region this is entirely unaffordable given the high incidence of poverty and the heavy reliance on social welfare grants. There are however, virtually no alternatives for the general public who cannot afford private optometrists. There is currently only one optometrists filling community posts in this area according to Retselisitsoe Khalatha, (Interview: October, 2010) who is the community optometrist employed at Butterworth District Hospital.
Khalatha, (2010) describes a challenging situation in which many patients cannot access essential eye services that are usually provided by an optometrist. Government optometrists are scare and have minimal resources even if they can be reached. The College of Optometrists, (2010) also provide a further possible explanation for why patients do not access the limited eye services that are available. A person’s eyes do not always hurt when something is wrong so potential problems can go unchecked and results in permanent eye damage. They go on to explain that an eye examination as opposed to refraction has historically been performed by an optometrist and is important for many reasons.

An eye examination can pick up early signs of potentially blinding conditions such as glaucoma. It can detect an underlying health problem such as high blood pressure or diabetes. An eye examination also checks whether a person has a refractive error and whether they need spectacles to correct the refractive error. Good vision also means working and playing safely and in fact a better quality of life. In young people an eye examination can detect any problems in sight that can affect school performance.

While it may appear trite, it is worth emphasizing that a person only has one set of eyes and once the eyesight is lost it may never be restored.

1.2 Statement of the Problem

Refractive errors are prevalent in the region under study and there is a shortage of optometrists providing accessible and affordable refractive services in the Amathole, Chris Hani, Joe Gqadi and O.R. Tambo District Municipalities. Remedies to increase affordable refractive services to the lower income public need to be indentified. Training nurses to provide refractive services will be explored as a possible solution to the problem.

1.3 Purpose and Objectives of the Study

The purpose of this study is to identify patients with refractive errors and those requiring refractive services at 15 eye clinics conducted at District Hospitals and
Community Health Centres situated in the Amathole, Chris Hani, Joe Gqabi and O.R. Tambo District Municipalities. The purpose of this study is also to describe the refractive services that are available to patients attending health facilities where the eye clinics are conducted. The study will also explore the possibility of nurses providing refractive services independently or under the supervision of an optometrist, including an analysis of the pros and cons of this in light of the primary data that is gathered in this research.

1.4 Hypotheses

There is a high prevalence of patients with refractive errors and of patients requiring refractive services at 15 eye clinics and it is hypothesized that under the right circumstances, nurses with the correct training and skills can make a valuable contribution to alleviate refractive errors.

1.5 Research questions

What is the prevalence of refractive errors and patients requiring refractive services at the 15 eye clinics in the Amathole, Chris Hani, Joe Gqabi and OR Tambo Districts of the Eastern Cape? What eye services are available to patients attending the 15 health care facilities where the clinics are being conducted? Can nurses make a valuable contribution in assisting patients with refractive errors?

1.6 Significance of the study

This study is significant because it will highlight the prevalence of patients with refractive errors or requiring refractive services in the researched area. It is submitted that this is an area that is under researched. This study will highlight the accessibility and affordability of essential refractive services in the areas under focus. Lastly, the study will investigate nurses' views on the possibility of being trained to fill the gap in essential eye health delivery.

1.7 Measurement instrument

Data collected from Vision Care's eye clinic register from January 2010 – June 2010 was recorded on an
Excel spread sheet. Patients were screened for refractive errors by the optometrist with the aid of a streak retinoscope and an autorefractor.

1.8 Inclusion and exclusion criteria

Only patients that were screened at Vision care's eye clinic held at 15 different health facilities between January 2010 – June 2010 were included in the data. The inclusion criteria for nurse participants were that they were employed in the out-patients department where the eye clinics were conducted and had some knowledge of the eye clinics.

1.9 Definition of terms

The most common terms that will be referred to in this research are refraction, refractive error, corrected refractive error, uncorrected refractive error, myopia, hyperopia, astigmatism, presbyopia, cataract, glaucoma and macular degeneration. A short description of each term is provided below.

'Refraction' is the term used to describe the process of measuring a patient’s refractive error and determining the optical correction needed to focus light ray from distant and near objects into the retina and provide the patient with clear and comfortable vision (Wilson, 1996,58).

'Refractive error' is a very common eye disorder. It occurs when the eye cannot clearly focus on the images from the outside world. The result of a refractive error is blurred vision, which is sometimes so severe that it causes visual impairment (World Health Organization (WHO), 2011).

'Corrected Refractive error' is a refractive error that has been corrected by spectacles or contact lenses (American Academy of Ophthalmology, 2010).

'Uncorrected Refractive error' is a refractive error that has not been corrected with spectacles or contact lenses (American Academy of Ophthalmology, 2010).
'Myopia' nearsightedness; a refractive error in which the focus of light rays from a distant object is anterior to the retina (Smeltzer et al, 2008:2043).

Figure 2

(Laser Eye Surgery Review, 2010)

'Hyperopia' farsightedness; a refractive error in which the focus of light rays from a distant object is posterior to the retina (Smeltzer et al, 2008:2043).

Figure 3

(Laser Eye Surgery Review, 2010)

'Astigmatism' is a refractive error in which light rays are spread over a diffuse area rather than sharply focused on the retina, a condition caused by differences in the curvature of the cornea and lens (Smeltzer et al, 2008:2043).

In an eye with astigmatism, light fails to come to a single focus on the retina to produce clear vision. Instead, multiple focus points occur, either in front of or behind the retina (or both). (All About Vision, 2012)
'Blindness' the inability to see, usually defined as corrected visual acuity of 6/120 or less, or a visual field of no more than 20 degrees in the better eye (Smeltzer et al, 2008:2043).

'Presbyopia' ("farsightedness of aging") is the gradual loss of accommodative response of the eye, resulting from the loss of lens elasticity (Visser, 2006).

'Cataract' is cloudiness (opacity) in the eye's lens that impairs vision and produces a progressive, painless loss of vision (Berkow, 1997:1042).

'Glaucoma' is a group of ocular conditions characterized by optic nerve damage. The optic nerve damage is related to the intraocular pressure caused by congestion of aqueous humor in the eye. (Smeltzer et al, 2008:2054).

'Macular degeneration' is a condition in which the macula, the central and most vital area of the retina, degenerates (Berkow, 1997:1043).

1.10 Summary

This study consists of five chapters. Chapter 2 reviews the literature on refractive errors, eye services, and nurses as refractionists. Chapter 3 provides a detailed description of the quantitative and qualitative research methodologies used in this study. Here data sampling,
data collection instruments and data analysis will be discussed. Chapter 4 presents the research findings. Chapter 5 will include a discussion of the results and an interpretation of the research findings as well as recommendations for further research. The study will end with a hypothesis on the suitability, sustainability, and cost effectiveness of having professional nurses offer refraction services, and will discuss the pros and cons of nurses performing refractions.
CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

In this chapter, literature that is based on the main concepts that are discussed in and inform this study will be reviewed. This includes refractive errors, eye services and nurses' current role in refraction. The majority of the literature is from international sources as there is a dearth of published sources in the South African context. Correspondence with eye care specialists working in South Africa and similarly situated developing countries has been included in this literature review.

Some of the information in the literature was obtained from accessing the official websites of organisations that are taking an active role in eye care promotion. Correspondence was also entered into with various eye care specialists including Mr Harry Rosen who is the CEO of the South African Optometric Association, Dr Karin Lecuona who is a consultant ophthalmologist at Groote Schuur Hospital in Cape Town, Dr Peter Mitchell who is the Training and Educational Manager for Vision Aid Overseas (VAO) program and Dr K Naidoo who is the Global Program Director of the International Centre for Eyecare Education (ICEE), Durban.

2.2 Refractive errors

In order to fully engage with this research it is necessary that the reader has a basic understanding of the physiology of sight and the refractive errors that interfere with the process of obtaining good vision.

This section will review the physiology of vision, the prevalence of refractive errors as reported by established eye care authorities, the consequences of uncorrected refractive errors and the correction of refractive errors.

2.2.1 Physiology of vision

The ability to see is a direct result of light focusing correctly on the retina. The process of refraction, which
is the bending of light rays, is affected by the shape and condition of the cornea, the power and strength of the lens and the shape of the eyeball (Alcon, 2010). When light travels through the eyeball it is bent (refracted) as it passes through one structure into another structure of greater or lesser density until the light eventually reaches the retina. The refraction of light within the eye takes place through four structures. Light is refracted at the cornea, then the aqueous humor, then the lens and lastly at the vitreous humor. (Innvista, 2010)

The refraction of light rays needs to take place at the four structures in order for the physiology of vision to take place.

Figure 5

Errors in Refraction fall into four main categories –

a) Astigmatism is the result of irregular curvature of cornea or lens and causes blurring in the visual field (Innvista, 2010)

Astigmatism is when an optical system has different foci for rays that propagate in two perpendicular planes (Webster, 2012)

b) Myopia (nearsightedness) occurs when the eyeball is too long or lens too thick and causes distant objects to appear blurred (Innvista, 2010)
Those with myopia see clearly but distant objects appear blurred - with myopia, the eyeball is too long, or the cornea is too steep, so images are focused in the vitreous inside the eye rather than on the retina at the back of the eye (Webster, 2012)

c) Hyperopia (farsightedness) occur when the eyeball is too short or the lens too thin and causes near objects to appear blurred (Innvista, 2010)

As an object moves towards the eye, the eye must increase its power to keep the image in focus on the retina. If the power of the cornea and lens is insufficient, as in hyperopia, the image will appear blurred (Webster, 2012)

d) Presbyopia (farsightedness of aging) is the gradual loss of accommodative response of the eye, resulting from the loss of lens elasticity (Visser, 2006)

Presbyopia describes a condition where the eye exhibits a progressively diminished ability to focus on near objects with age (Webster, 2012)

A person who is trained in refraction uses lenses to refract (bend) the light rays more or less (as required) so that the light rays will focus on the retina resulting in the patient having clear vision. In this way the refractive error is corrected.

2.2.2 Basic refraction procedure

The basic refraction procedure is made up of several steps. The VAO Refraction Manuel summaries these steps as follows. This information was obtained from Dr P. Mitchell in an attachment on the 10.09.2010.

Step 1
History and Symptoms – A patient attending an eye clinic should firstly be asked what his or her eye problem is. Eye complaints can usually be divided into 4 major groups

1. The patient cannot see far
2. The patient cannot see at near, e.g. to read or thread needles
3. The eye is red and painful
4. Other specific problems, e.g. double vision

If the answer is 3 or 4 then the patient needs to have a thorough eye examination to check for abnormalities of the eye. If the eye complaint is of poor vision at far and/or near then the patient may require spectacles to improve their vision.

Step 2
Visual acuity (aided and unaided) – This step is to measure the patients vision in each eye at far and near distance. This tells us how well a person can see with and without their spectacles. There are two types of charts available for testing vision, a multi-letter Snellen chart and an E Snellen chart which is used for those who cannot read.

Step 3
Cover test – This is done to detect the movement of each eye so that conditions such as phoria which is a mild form of squint, can be diagnosed.

Step 4
Measuring of inter-pupillary distance – This is done to measure the distance between pupils and is done with a special measuring stick.

Step 5
Retinoscopy – Retinoscopy is an objective method of finding the refractive error. It is a useful technique as it gives the refractive error of a patient who is unable to do a subjective test. It is also a starting point for the subjective tests that follow and it can clearly illuminate cataracts that are seen as dark areas in the pupil against the red reflex.

Step 6
Subjective tests –Best Vision Sphere (BVS) - Best vision sphere as the name suggests is the spherical correcting lens which will provide the best visual acuity attainable by sphere correction.

Step 7
+1.00 DS - blur test – This is a useful test to use in young patients who have difficulty in relaxing their accommodation.

Step 8
Repeat Steps 6 & 7 for left eye.
Step 9
Measure amplitude of accommodation and reading/working distance

Step 10
Give reading addition if required and note near acuity

Step 11
Write prescription, indicating if it is for distance, near or both.

The basic equipment required at the primary eye care centre for refraction include, a Snellen chart, near vision chart, trial lens set, trial frame, streak retinoscope and Jackson cross cylinder. (Naidoo & Ravilla, 2007) The total cost of these is estimated at R11,000. A refraction takes approximately 20 minutes to perform.

An autorefractor is a computer-controlled machine used during an eye examination to provide an objective measurement of a person’s refractive error and prescription for glasses or contact lenses (Wikipedia, 2011). An autorefractor simplifies the refraction procedure but it is not essential equipment for refraction. It’s price is estimated at R45,000.

2.2.3 Prevalence of refractive errors

On ‘World Sight Day’, October 12, 2006 the World Health Organization (WHO) released statistics indicating the prevalence of refractive error which revealed the magnitude of the problem. Its research found that 153 million people are blind or visually impaired due to uncorrected refractive error (Holden, 2007). This same figure has been quoted by Helen Keller International (HKI) (2010) These figures however, do not include presbyopics which are people who suffer from farsightedness because of aging.

The organization ‘Vision Aid Overseas’ (VAO) which aims to improve access to quality eye care in developing countries estimates that 500 million people worldwide are unnecessarily visually impaired due to refractive errors. This figure does include presbyopics, suggesting that approximately 350 million people suffer from presbyopia. (Vision Aid Overseas, 2010)
The International Centre for Eyecare Education (IC EE) and the World Council of Optometry put the refractive error figure at 670 million in Sept 2010 (Mail and Guardian, 17.9.2010) with at least 153 million people suffering from treatable blindness or vision impairment at distance and a further 517 million due to farsightedness of aging.

These figures show that there is a high prevalence of presbyopia in the world. Truscott (2009) explains in his article ‘All people will be presbyopic by age 50’ that this phenomenon is the direct result of two features, namely the design of the transparent lens and the way that it must change shape to enable focusing by the human eye and the effect of unstable proteins over a long period of time. In an article by Visser (2006) “Common eye disorders in the elderly – a short review” Visser explains that as the eye ages certain changes occur that can affect vision, these include presbyopia among others. Presbyopia is the most common and one of the earliest age –related disorders of the eyes and usually begins between the ages of 40 and 45.

According to Patel and West (2007) in an article entitled ‘Presbyopia: prevalence, impact and interventions’ the prevalence of presbyopia in low and middle income countries is not well known as most studies on refractive errors have focused on distance vision. Few presbyopia studies have used population-based approach therefore making it difficult to draw conclusions about the prevalence of presbyopia in the general population. However, due to research by Visser (2006), it is now established that most people between the ages of 40 and 45 will start having difficulty with near vision and this difficulty will progress through life.

2.2.4 Studies on the prevalence of refractive errors

The researcher found over 100 studies on the prevalence of refractive error in children and over 100 studies on the prevalence of refractive errors in adults. Most studies on refractive errors are population based. In the study on the ‘Refractive error status in ‘Bayelsa State, Nigeria’ where there were 319 males and 335 females in the study with a age range of 5-86 year, 54,28% of the cases observed had significant refractive error (Koroye-Egbe, Overseri-Ogboomo & Adio, 2010).
Two other studies that are significant for their similarities to the South African context are ‘The Barbados Eye Study, (1999) which researched the prevalence of refractive errors in a black adult population of Barbados, and ‘The Andhra Predesh Eye Disease Study, (2006) which is a population-based assessment of presbyopia in the state of Andhra Pradesh, South India. The Barbados Eye Study which was a population-based study in 1999, included 4709 Barbados-born citizens, or 84% of a random sample, 40 to 84 years in age. The results showed the prevalence of myopia to be 21.9% and the prevalence of hyperopia to be 46.9%.

‘The Andhra Pradesh Eye Disease Study’, South India which examined 5587 subjects 30 years of age or older in 2006, had an age, gender, and area-adjusted prevalence of presbyopia of 55.3%.

In a study conducted to establish the ‘Frequency of refractive errors in children visiting eye out patient department agency head quarter hospital Landi Kotal’, Pakistan, from January 2006 to December 2007, 500(10%) of the 4974 children aged 1-15 had refractive errors (Sethi, Sethi & Iqbal, 2009).

The only research conducted in South Africa on the prevalence of refractive errors was the ‘Refractive Error and Visual Impairment in African Children in South Africa’ study conducted from January to August 2002. A random selection of geographically defined clusters was used to identify a sample of children for ages 5 to 15 years in the Durban, KwaZulu-Natal area. A total of 5599 children living in 2712 households were identified, and 4890 (87.3%) were examined. The study found that there was a low prevalence of reduced vision in school-age African children and that most of it was due to uncorrected refractive error. Refractive error was the cause of the 191 (63.6%) eyes with reduced vision (Naidoo, Raghunandan, Mashige, Govender, Holden, Pokharel & Ellwein, 2003). There were no figures for the prevalence of refractive errors in the general population of South Africa according to SABPB (South African Bureau for the Prevention of Blindness) on the 17/11/2010.
2.2.5 Information on South Africa

In South Africa, it is estimated that 50% of blindness is due to cataracts according to Kluever (2006) from the South African Bureau for the Prevention of Blindness (SABPB) that affect an estimated 170,000 people.

The Eastern Cape Department of Health (The Fred Hollows Foundation, 2010) conducted a Rapid Assessment for Avoidable Blindness (RAAB) in the Eastern Cape Province in 2010 with the following key results being relevant to this study: The all-age prevalence of blindness for Eastern Cape Province of South Africa is estimated to be 0.58%. Avoidable causes of blindness (operated and un-operated cataract, refractive error uncorrected) accounted for 73.2% of blindness, 86.1% of severe visual impairment and 85.7% of visual impairment. Refractive error was becoming a significant cause of avoidable blindness and 1.4% of people had low vision. Information was obtained from Dr PB Cromhout in an interview 15.02.2011. He is the Managing Director of the Small Projects Foundation, East London.

The Transnet Phelophepa healthcare train visited the Eastern Cape in 2008. According to the Eye Clinic 2008 Report the following figures were recorded at Mthatha, Dutywa and Butterworth stations.

Table 1

<table>
<thead>
<tr>
<th>Stations</th>
<th>Registration</th>
<th>Spectacles dispensed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mthatha</td>
<td>508</td>
<td>470</td>
</tr>
<tr>
<td>Dutywa</td>
<td>588</td>
<td>593</td>
</tr>
<tr>
<td>Butterworth</td>
<td>568</td>
<td>539</td>
</tr>
</tbody>
</table>

The data does not allow for the calculation of refractive errors in the population as it is impossible to know how many patients received more than one pair of spectacles. However, the report does state that the statistics of patient attendance at the eye clinics through the Eastern Cape province indicates the demand and need for the optometric services at virtually all the stations and therefore the communities which they represent. This information was obtained from Christo Pretorius on the 15.05.2012 and was from the Transnet Foundation, Regional Report.
This study aims to provide statistics of the prevalence of refractive errors and people requiring refractive services in a limited setting. It is predicted that the findings will show that there is a high prevalence of patients in need of refractive services.

2.2.6 Consequences of refractive errors

There is a strong link between uncorrected refractive errors and poverty according to C. LeGalesCamus who is the WHO (World Health Organisation) Assistant Director General. In an article ‘Uncorrected refractive error: the major and most easily avoidable cause of vision loss’ she states that without optical correction millions of children are loosing educational opportunities and adults are excluded from livelihoods resulting in economic and social hardship. Families are often pushed into a cycle of deepening poverty due to the inability to see well (Holden, Sept 2007).

These sentiments are echoed by Holden and Resnikoff (2002) in ‘The Role of Optometry in Vision 2020’. Vision2020 is a global initiative for the elimination of avoidable blindness. They argue that uncorrected refractive errors have severe social and economic effects on individuals and communities resulting in restrictions on educational and employment opportunities of otherwise healthy individuals.

Presbyopia affects quality of life not only in high-income countries where reading and writing are the main near vision tasks but also in low income countries where reading and writing are less a part of life (Patel and West, 2007). In a study in Tanzanian rural communities, where near vision tasks other than reading and writing are predominate, it was shown that uncorrected presbyopia had a substantial impact on quality of life. The research showed that near vision was needed for winnowing grain, sorting rice, weeding, sewing, cooking food, dressing children, lighting and adjusting lamps. The research found that 80 per cent of people with presbyopia reported having problems with near vision work and 71 per cent were dissatisfied with their ability to do near work.

As stated in chapter 1, the Amathole, Chris Hani, Joe Gqabi and O.R. Tambo District Municipalities are inhabited by disadvantaged communities where poverty
is pervasive and employment levels are low. An uncorrected refractive error has the potential to deepen this cycle of poverty and perpetuate the problems that already exist. Individuals who are otherwise healthy become housebound and unable to access work opportunities that do exist. Children with poor eye sight struggle to perform basic reading and writing tasks at school due to this barrier to learning. Without the proper identification and correction of refractive errors children are severely disadvantaged, the proper learning foundation is not put in place, and they are unlikely to ever reach their full academic or vocational potential.

2.2.7 Correction of refractive errors

A refractive error can be corrected with prescription lenses or contact lenses. In South Africa refractive services are mainly provided by private optometrists and to a lesser extent, public optometrists employed by the state. In many cases the prescription spectacles available at private optometrists are simply unaffordable, especially in areas of high poverty such as the municipal districts that are the focus of this study. According to Rosen from the South African Optometric Association there are 110 optometrists filling government posts in South Africa. This information was obtained from Rosen in a telephonic interview on the 18.08.2010. With a general population of almost 50 million people in South Africa, this equates to one state funded optometrist for every 454,545 people. Holden and Resnikoff (2002) explain in an article ‘The Role of Optometry in Vision2020’ that in most developed countries the optometrist to population ratio is approximately 1:10,000. However in many developing countries this ratio is closer to 1:600,000 and much worse in many rural areas. Our South African estimate definitely compares with developing countries.

According to VAO, (2010) there are over 500 million people worldwide that are unnecessarily visually impaired because they do not have spectacles. VAO says this is due to the significant lack of eye care services in low and middle income countries. Refractive errors can be easily corrected if a refractive service program is in place. It requires a trained person to perform the refraction, refraction equipment, dispensing equipment, prescription lenses and frames. Importantly the program must be accessible and affordable.
Joshua Silver is an atomic physicist who invented liquid-filled optical lenses to produce low-cost, adjustable glasses. His invention has given sight to millions of people who don't have access to an optometrist. (Ted, 2012)

2.3 Eye services

This section will review Government and Non-governmental eye care services to the public sector and refraction program models

2.3.1 Government eye care services

The article ‘Analysis of eye services in South Africa’s public sector’, Lecuona (2007) documents the findings of a survey of the public sector, which serves 80% of the population.

The study found that as of December 2007, cataract services had been established in 43 of the 53 districts in South Africa and that there were a total of 65 ophthalmic nurses, 5 managers, 78 optometrists and 124 cataract surgeons working in these districts.

The study also found that although refraction services had been introduced in most districts, standardized refraction figures were not available which meant that human resources could not be effectively deployed where they were most needed. The survey also noted that ophthalmic nursing was seen by some planners as specialized nursing and therefore not appropriate in primary care which is the priority modality of nursing in South Africa.

During 2010, the Eastern Cape Department of Health conducted a situation assessment of Health at six hospitals and 23 clinics in the Eastern Cape, to assess the availability of eye care equipment and related infrastructure needs as well as human resource capacity in the delivery of eye care service. It was found that there was a general shortage of eye care personnel at all levels and that in-service training was needed for different levels of eye care personnel particularly at the primary health care level. In the human resource categories there were 10 optometrists filling public posts
in the Eastern Cape with a population of 6727,435. The assessment estimated that a further 16 optometrists were needed to fill the gap, which would provide a ratio of 1: 250 000 population which is the recommended ratio according to the Vision 2020 guidelines. (The Fred Hollows Foundation, 2011)

2.3.2 Non governmental eye care services

2.3.2.1 Vision Care

As stated in chapter one, Vision Care is a non-governmental eye care organization which has done much to service the communities dependent on the 15 health care facilities on which this research is based. They provide a free eye screening service and dispense clinic glasses at a cost of R50. They also provide a referral service to optometrists and ophthalmologists

2.3.2.2 South African Bureau for Prevention of Blindness (SABPB)

The South African Bureau for Prevention of Blindness was founded in 1944 and is a division of the South African National Council for the Blind. The SABPB strategy has been built over decades into a model which aims to increase eye care service access to disadvantaged townships and rural people while at the same time building self sustaining programs within provincial health care services. The SABPB aims to establish permanent eye care centres or to strengthen existing centres. They have mobile units that provide services to populations identified as having under resourced eye care services.

The SABPB has four mobile eye care units that are based in Pretoria and are staffed with 3 ophthalmic nurses who have attended a basic two week course in refraction run by the International Centre for Eye Care Education (ICEE) and dispense 5,000 to 10,000 spectacles each year. The SABPB program is primarily focuses on screening of cataract patients and extraction of cataracts. Information on the SABPB was found in Kluever (2006).
In a telephone interview on the 18 May 2010, the SABPB stated that their services to the Amathole, Chris Hani, Joe Gqabi and O.R. Tambo District Municipalities had been temporarily suspended due to non-payment by the government. On the 10 June 2011, the researcher was informed by the SABPB that services had not been reinstated in the Amathole, Chris Hani, Joe Gqabi and OR Tambo district municipalities although payment had been received from the Eastern Cape, Department of Health. They were at present awaiting communication from senior management. This information was provided by Maria Hlonipho of the SABPB.

2.3.2.3 Fred Hollows Foundation (FHF)

Another organisation providing important eye services in the Eastern Cape is the Fred Hollows Foundation (FHF). In an article entitled 'Fred Hollows Foundation CEO Visits Eastern Cape', Hlanele, (2010) explains that the FHF is an international development organisation focusing on blindness prevention. Fred Hollows (1929-1993) was a passionate ophthalmologist who became known for helping restore the eyesight of thousands of people in developing countries around the world. (The Fred Hollows Foundation, 2011)

The vision of the FHF is for “a world where no one is needlessly blind.” The FHF has been working in South Africa since 1999 and has been in partnership with the Eastern Cape Department of Health since January 2001. FHF central programme is the Eastern Cape Blindness Prevention Partnership Programme (ECBPPP). The aim of the programme is to develop sustainable local capacity to prevent and treat avoidable blindness in South Africa and to be a catalyst for improving the eye services to South Africans, especially those in rural communities.

The aims of the ECBPPP are to provide a comprehensive eye care service with a focus on cataract eradication, training cataract surgeons and ophthalmic nurses and also focusing on the functioning of the Sabona Centre of Excellence at the Frontier Hospital in Queenstown and the provision of equipment and space in six provincial hospitals (The Fred Hollows Foundation, 2011). While the FHF has made significant inroads in the eradication of cataracts, there has been little done in the area of refractive errors.
2.3.2.4 Small Projects Foundation

The Small Projects Foundation has also made a significant contribution to eye care in the Eastern Cape. One of the key objectives of the organization is to achieve development of individuals and communities in terms of primary health care and particularly in terms of the Vision 2020 objectives. The mission of Vision 2020 global initiative is to eliminate the main causes of all preventable and treatable blindness as a public health issue by the year 2020. The objectives Vision 2020 are as follows:

- Raise the profile, among the key audiences, of the causes of available blindness and the solutions that will help to eliminate the problem.

- Identify and secure the necessary resources around the world in order to provide an increased level of prevention and treatment programmers'.

- Facilitate the planning, development and implementation of the three core Vision 2020 strategies by National Programmers (WHO, 2011)

The Small Projects Foundation was able to identify 250 people in the Nyandeni Health District near Libode of the Eastern Cape who were blind or needed screening services. In a period of three months they assisted 121 patients who were blind due to cataracts and have set up a system to help many more people. (Small Projects Foundation, 2010)

2.3.2.5 Phelophepa healthcare train

The Transnet Phelophepa healthcare train project which was launched in 1994 is currently in its 18th year of providing South Africa's poor rural communities with primary health care services. The train's major external partner is the international pharmaceutical company Roche. The service runs 35 weeks of the year through eight provinces excluding Gauteng. The train covers a total of 15 000 km of railway track and treats about 46000 patients in its on board clinics each year. The train boasts a primary healthcare clinic, an optometry clinic and a pharmacy and counselling service. The
charge for a pair of clinic spectacles is R30. (Engineering News, 2012)
The Phelophepa train recently visited communities living along the Kei Rail Line between Mbashe and King Sabata Dalindyebo after a 2 year absence and was stationed at the Zamukulungisa station in Mthatha. (South African Government Information, 2012)

The five NGOs discussed above make an important contribution to improving eye care facilities in the province but they only reach a small fraction of those in need. The next section discusses program models that have been instituted in other parts of the world and could be introduced in South Africa to fill the gap in eye service delivery.

2.4 Refraction program models

Refraction programs have been suggested and implemented in some countries to fill the gap in refraction services.

2.4.1 Naidoo and Ravilla model

In an article entitled ‘Delivering refractive error services: primary eye care centres and outreach’, Naidoo and Ravilla (2007) wrote that ‘Addressing refractive errors, the second major cause of preventable blindness, is now a priority for eye care programmes’. They explain that although a simple pair of spectacles will correct refractive error, there exists a high prevalence of uncorrected refractive error. They further argue that this is due in large part to the cost and inaccessibility of refraction and spectacle dispensing services, which are usually offered only at secondary and tertiary eye care centres.

Naidoo and Ravilla explain that optometrists and ophthalmologists who provide these services are often kept very busy providing a range of other eye care services. This means that the number of refractions they have time for falls short of community needs and the distance to these secondary and tertiary eye care centres also hinders access. They emphasize that people who have been refracted and issued with a spectacle prescription need to have access to an affordable spectacle dispensing service. Due to the fact
that most spectacles retailers are concentrated in bigger towns, accessibility is a major challenge for rural communities.

They suggest that to solve the problem of uncorrected refractive error in low and middle income countries, it is important to provide comprehensive services such as refraction and dispensing of spectacles at the primary level of eye care where they will be most accessible to the community. They state that to deliver a comprehensive refractive service at the primary level requires a particular programme. The programme must include a trained person to refract and provide counselling about refractive error as part of a general eye examination and service, equipment for vision testing, refraction, and spectacle dispensing and spectacles which are acceptable and affordable to the patient. They state that one can expect about 20% of the population in total to require refraction services.

The previous article describes a service that could be made available to South Africa's poor and rural populations and is closely linked to the purpose of the research.

2.4.2 Faal and Qureshi model

In an article entitled ‘Training to meet the need for refractive error services’, Faal and Qureshi (2007) state that ‘in many low and middle income countries, there are inadequate refractive error services for the people who are currently either blind or visually impaired because they lack a pair of spectacles.’ Faal and Qureshi argue that to ensure the success of a refractive error program, there have to be enough people with the right skills in order to provide refraction services throughout the program. They argue that careful thought should be given to setting up an appropriate training program that will support the human resource needs of a refractive error program.

2.4.3 Holden and Resnikoff model

In the article ‘The Role of Optometry in Vision 2020’ Holden and Resnikoff (2002) state that the way to eliminate uncorrected refractive error is through the development of a self-sustaining system that includes the personnel to provide eye care services and the spectacles to correct vision. The article notes that to deliver good quality eye care to countries with the greatest requirements there needs to be a steady but
substantial increase in the number of eye care personnel trained in refraction and vision correction. The situation requires optometry to take a major role in training mid-level personnel in refractive care. This means someone trained in refraction who is not an optometrist.

It is submitted that it is not enough to have eye care personnel trained, there also needs to be sufficient resources of affordable and accessible spectacles for the trained personnel to dispense. Without these two key developments the problem will not be addressed.

2.5 Nurses as refractionists

This section outlines the views of various role players in nursing, optometry and ophthalmology on the practicality and suitability of nurses filling the gap in refraction services in South Africa.

According to Subedar, (2005) in her article ‘Nursing profession, production of nurses and proposed scope of practice’ she states that overall the current scope of practice is not aligned to the current health policies and the health care system of South Africa. While the area of optometry has historically been a medical field dominated by optometrists, there appears to be a lack of optometrists working in the public sector which according to Lecuona (2007), makes up 80% of the South African population.

A statement from Rosen (2010), who is the CEO of the South African Optometric Association (SAOA), on the SAOA's position on Nursing Sisters states that ‘taking cognizance of the challenges facing South Africa in terms of affordable, accessible and quality eye care to all South Africans, there is indeed an important and special role for nursing sisters within the arena of optometric services.’ He goes on to note however that, the scope of any profession acts needs to be governed by appropriate and required levels of competency but that there is an important auxiliary function for nurses under the supervision of optometrists. The letter further explains that the auxiliary function would be over and above basic screening although the details of such a role are not yet defined (attachment A). The lack of optometrists in the public sector has therefore been highlighted by SAOA. Rosen states that nurses will play a role in optometric services but problematically, this role is not specified.
In a letter from Harris (2010), who is a practicing optometrist in the UK and who worked at Vision Care from 1987-1989 he states that ‘refraction is not a difficult skill to learn and is mostly a question of practice. In the UK there are now courses for dispensing opticians (especially those fitting contact lenses) to learn to refract. Even orthoptists (who deal with binocular vision problems) can perform refraction. I see no reason why nurses should not be able to refract with the right training’ (attachment B).

In a letter from Lecuona on 16 February 2010 she argued that ‘optometrists are threatened by the thought of nursing practitioners doing refractions. There is a large push for optometrists to be appointed in the state which may (or may not) solve the problem of refractions services for the poor. The difficulties encountered in the procurement trail are more problematic than acquiring the skill of performing a refraction.’ According to Lecuona the problem of procuring optometrists is more difficult than acquiring the skills necessary to perform a refraction (attachment C).

Edwards (2010) is the programme Director in Zambia for VAO and reports on the program they have initiated in training nurses in refraction. She explains that Peter Howard (an optometrist) and his team set up a new Vision Centre at Kabwe General Hospital in Zambia where one ophthalmic nurse and two general nurses were trained in refraction. The report states that two follow up visits were made to the Kabwe Vision Centre and that it was doing remarkably well with two nurses refracting on a full time basis and one ophthalmic nurse refracting part time (attachment D).

Mitchell (2010) is the Training and Education Manager for the VAO program and explains in an e-mail that VAO programs in the past have had mixed results. He explains that the main problem is that the area of refraction is never a nurses’ main area of responsibility and tends to be the first thing that is sacrificed when nurses are needed in other duties. He explains that it is crucial to meet certain criteria before embarking on any training (attachment E):
There needs to be some form of agreement and commitment that the nurses will be allowed to practice refraction regularly.

There needs to be some way of being able to supply the spectacles to meet the spectacle prescription.

The VAO refraction course for nurses uses a program of four to five visits over the course of a year with each course lasting two weeks. The training team consists of two UK trained and registered optometrists and dispensing opticians. The program provides on-the-job training and emphasizes that nurses learn best in a clinical situation working with patients under supervision. The practical work is supported by a mixture of lectures, practical workshops, discussion groups and course work. The nurses are also provided with a log book to record their work. Mitchell concludes that by the end of the last visit most of the nurses are able to carry out a competent refraction on all but the most complicated of cases. Mitchell explains that as long as nurses are able to practice refractions regularly they can perform refractions on all but the most complicated cases with competence.

A similar problem to that faced by VAO in Zambia was experienced by ICCE in Durban. According to Naidoo in who is the Global Programme Director for ICCE, they offered six week course in refraction for nurses from 2004-2008. He said that the program had some draw backs such as the nurses not being allowed to refract once they returned to their respective health facilities. This information was obtained from Naidoo in a telephonic interview on the 25.01.2010.

Summary

The literature review describes an eye condition called a refractive error that can be easily corrected with a pair of spectacles. In South Africa there is a lack of optometrists working in the public sector which results in many patients not having their refractive error corrected. The alternative for many patients is to access private optometrist services which are largely unaffordable for much of the population in Amathole, Chris Hani, Joe Gqabi and O.R. Tambo Districts of the Eastern Cape.
This chapter has also described a program for training nurses in refraction which has been successfully implemented in Zambia. The next chapter will discuss the research methodology.
CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter describes the research method utilized in this research. It also describes the population, sample, instrument for collecting data, data collection procedure, ethical considerations and data analysis.

3.2 Research Design

The research design for this study utilized a quantitative and qualitative non-experimental descriptive study. The study was aimed at identifying patients with refractive errors and those requiring refractive services, investigating what eye services were available to patients attending the 15 eye clinics and determining nurses' attitudes towards refractive errors and the training of nurses in refraction.

3.2.1 Quantitative Research

The focus for quantitative research is usually concise and reductionism. Reductionism involves breaking the whole into parts so that the parts can be studied and examined (Burns & Grove, 2005:24) Quantitative research focuses on a relatively small number of concepts (concise and narrow) (Brink, 2008:11) It is the study of phenomena that lend themselves to precise measurement and quantification, often involving a rigorous and controlled design (Polit, Beck & Hungler, 2001:469)

3.2.2 Qualitative Research

The focus of qualitative research is usually broad, and the intent of the research is to give meaning to the whole (holistic) (Burns & Grove, 2005:24) Qualitative research attempts to understand the phenomenon in its entirety, rather than focusing on specific concepts (complex and broad) (Brink, 2008:11)

Qualitative research is the investigation of phenomena, typically in an in-depth and holistic fashion, through the collection of rich narrative materials using a flexible research design (Polit et al, 2001:469)
The study was non-experimental because there was no manipulation of the independent variable and, therefore, no intervention; nor was the setting controlled. The major purpose of non-experimental research is to describe phenomena, and explore and explain the relationships between variables. (Brink, 2008:102)

The study was quantitative because it quantified the prevalence of refractive errors and patients requiring refractive services at the 15 eye clinics. It also quantified the eye services that were available at the 15 health facilities where the eye clinics were conducted. The study was also descriptive and qualitative because it described the nurses' attitudes towards refractive errors and their willingness to make a contribution towards elevating refractive errors.

Descriptive designs are structured to gain more information about the characteristics within a particular area of study. Their purpose is to provide a picture of situations as they naturally happen. (Burns & Grove, 2005:232) Descriptive research studies have as their main objective the accurate portrayal of the characteristics of persons, situations, or groups, and/or the frequency with which certain phenomena occur. (Polit et al, 2001:460)

This research involved an analysis of Vision care's eye clinic records that were collected from the 15 eye clinics for the period of January 2010-June 2010. The following information was recorded from the clinic registers:

- Age of patient
- Gender of patient
- Patient with refractive error (assisted with clinic specs)
- Patient referred to optometrist for full refraction
- Patients referred to ophthalmologist for pathology

Through the analysis of the Vision Care clinic register the researcher established how many patients required refraction services and would be able to be assisted by nurses if they were trained in refraction and dispensing of spectacles. The researcher also describes the demographic variables of the patients attending the clinics in the next chapter.
3.3 Population

Population is the entire group of persons or objects that is of interest to the researcher, in other words, that meets the criteria which the researcher is interested in studying (Brink & Wood 1998). Population has also been described as an entire set of individuals (or objects) having some common characteristics, sometimes referred to as universe (Polit et al, 2001:467).

The population in this study was the nurses employed by the Department of Health working in the out-patients department where the eye clinics were conducted. As it was impossible for the researcher to interview all of the nurses in attendance at the clinics because of the time constraints, a sample of two nurses was taken from each of the clinics.

3.4 Sampling

Sampling involves selecting a group of people, events, behaviours, or other elements with which to conduct a study (Burns & Grove, 2005:341). It has also been described as the process of selecting a portion of the population to represent the entire population (Polit et al, 2001:470). Sampling refers to the researcher’s process of selecting the sample from the population in order to obtain information regarding a phenomenon in a way that represents the population of interest (Brink, 2008:124).

A sample of 2/9th of the nurses was drawn from each health facility using a purposive convenience sampling. There were approximately nine professional nurses working at each health facility and two of the nine nurses were interviewed. A total of 30 interviews were conducted. Purposive sampling technique is based on the judgment of the researcher regarding subjects or objects that are typical or representative of the study phenomenon, or who are particularly knowledgeable about the question at hand (Brink, 2008:133). Only nurses that assisted with Vision Care’s eye clinics and those who were most knowledgeable about eye conditions and eye services available at their health facility were interviewed.

The sample of nurses was taken from 15 health facilities falling under four district municipalities -

Amathole District Municipality:  
Butterworth Hospital  
Dutywa Health Centre  
Madwaleni Hospital  
Willowvale Health Centre
Chris Hani District Municipality: All Saints Hospital
Calal Hospital

Joe Gqabi District Municipality: Taylor Bequest Hospital

O.R. Tambo District Municipality: Mhlakulo Health Centre
Nessie Knight Hospital
PSJ Health Centre
Qumbu Health Centre
St Barnabas Hospital
St Elizabeth Hospital
St Lucy’s Hospital
Tombo Health Centre

The advantage of purposive sampling is that it allows the researcher to select the sample based on knowledge of the phenomena being researched. The disadvantages are the potential for sampling bias, the use of a sample that does not accurately represent the population as well as the limited generalisability of the results. (Brink, 2008:134)

Purposive sampling is based on the assumption that a researcher’s knowledge about the population can be used to hand pick the cases to be included in the sample (Polit et al, 2001:239) Purposive sampling was a good approach to use in this research as only the nurses that assisted with Vision Care’s eye clinics that were knowledgeable about refractive errors and eye conditions including the eye services that were available at their health facility were included in the study.

3.5 Measurement/instrument

The data collected from Vision Care’s eye clinic register was recorded on an Excel spreadsheet for analysis. The data recorded was as follows: age of patient, gender of patient, number of patients seen, number of patients with refractive errors, number of patients referred to optometrist, number of patients referred to ophthalmologist.

Patients were screened by the optometrist with the aid of a streak retinoscope and an autorefractor. An autorefractor is a computer-controlled machine used during an eye examination to provide an objective measurement of a person’s refractive error and prescription for glasses or contact lenses (Wikipedia, 2011).
A refractive error is measured as myopia (≥ -0.75 diopters), hyperopia (≥ +0.75 diopters), and/or astigmatism (≥ 0.50 of cylinder). All the patients that were identified as having a refractive error fell into the above category and most of the patients that were referred to an optometrist also fell into this category. The optometrist explained that an estimated 95% of the patients that were referred for refraction services would have a refraction error and an estimated 5% would be identified as having eye pathology when undergoing a full refraction service.

3.5.1 Interview schedule

The data collected from the semi-structured interview with nurses was recorded on an interview schedule. During a semi-structured interview the interviewer must ask a certain number of specific questions, but can also pose additional probes. Both closed-ended and open-ended questions are included in a semi-structured interview. (Brink, 2008:152)

Questions 1-8 are close ended and questions 9 and 10 are open ended

Close ended questions:

The following closed-ended questions were asked from the nurse participants:

❖ What is the name of the health facility where you are employed?

❖ What are your nursing qualifications? : This question ascertained whether nurses with a particular qualification might be better suited for training in refraction or possessed an interest in that particular area.

❖ How many years of service have you performed? : This question aimed to determine whether length of service influenced whether nurses were more or less likely to show an interest in acquiring refractive training and providing refractive services.

❖ Does your health facility employ any of the following eye specialists?

A – ophthalmologist
B – optometrist
C – ophthalmic nurse
This question was to establish what, if any eye services were available at the health facility.

If your health facility employs an optometrist does he/she perform eye examinations? y/n

This question was to establish the availability of refraction services

If yes, does your optometrist provide:
A- clinic spectacles
B- prescription spectacles

This question aimed to establish if dispensing services were available

Do any NGOs visit your facility and provide eye services?

This question aimed to establish what eye services the health facility had access to.

If a patient requires prescription spectacles, what distance would the patient need to travel to obtain them?

Do you refer all patients visiting you health facility with eye conditions to an eye care NGO service?

Answer either yes, no or sometimes

This question aimed to establish if NGOs that provided services were able to assist the majority of their patients with eye conditions.

Is the eye care NGO service able to assist most of your patients with eye conditions?

Answer either yes, no or sometimes

This question was to see if the NGOs that provided services were able to assist the majority of their patients with eye conditions.
Open-ended/close-ended questions:

- Nurses can be trained to perform eye refractions and dispense spectacles –

Do you strongly agree/agree/not sure/disagree/or strongly disagree with this statement. Reasons were also required for the answer given.

This question was used to establish whether nurses were willing to perform eye refractions and dispense spectacles.

- Would this have a positive impact on eye care? Yes or No

A reason was also required for the participants answer.

The question was posed in an attempt to illicit in-depth views from the participants as to whether they thought nurses being trained in refraction and being able to dispense spectacles would have an impact on eye care.

3.6 Data collection

Data is the information or facts collected during a research study (Brink, 2008:201) It has also been described as the process of selecting subjects and gathering data from these subjects (Burns & Grove, 2005: 430). Another explanation is the gathering of information needed to address a research problem (Polit et al, 2001:460)

Data collection took two forms: data was collected from Vision Care’s eye clinic register and interviews with the nurse participants were conducted at their respective health facilities in September and October 2010. All interviews were conducted in a private room. Each interview lasted approximately 20 minutes.

3.7 Ethical considerations

The researcher applied to the University of Fort Hare’s (UFH) ethics committee to conduct the study and the application was approved in August 2010. Permission was then sought from the Epidemiological Research & Surveillance Management Unit of the Eastern Cape Department of Health and permission was granted in September 2010. Permission was obtained from Vision care to conduct the study as some of the data was obtained from Vision care’s records. The researcher then requested
permission from the OR Tambo Health District Municipality and Amathole Health District Municipality and permission was granted in October 2010. (copies of letters of request and letters of permission granted attached)

The nurse participants were required to sign a consent form if they were willing to participate in the study. The consent form included a short description of the study, the nurses’ involvement and confirmation of anonymity and confidentiality and that their participation was purely voluntary. The participants’ names were excluded from the data collection form. (copy of consent form attached)

3.8 Data analysis

Polit et al (2001:460) defines data analysis as the systematic organization and synthesis of research data and testing of research hypothesis using those data. Data analysis entails categorising, ordering, manipulating and summarising the data and describing them in meaningful terms. (Brink, 2008:170) Data analysis is also conducted to reduce, organize, and give meaning to data (Burns & Grove 2005:733).

A Microsoft excel database was created for quantitative data analysis. The quantitative data included Vision Care’s eye clinic register and the quantitative data obtained from questions 1-8 of the nurse participant interviews. The quantitative data analysis is presented in the form of graphs and tables.

Questions 9 and 10 of the interview utilize qualitative descriptive analysis to explain the thoughts, views and insights of nurses on being trained to perform eye refractions and dispense spectacles and what impact this would make on eye care.

Qualitative data information is collected in narrative (non numerical) form, such as the transcripts of an unstructured interview (Polit et al: 2001:468). The qualitative data is presented in descriptive analysis form. In this way the actual words used by the participants to describe the experience are used when reporting the findings (Burns & Grove, 2005:559). The researcher has found common themes in the data and from these themes a structural explanation of the findings has been developed.

The researcher used coding and categorizing methods to analyze the data. Coding is used to organize data collected
in interviews and other types of documents. (Brink, 2008:185)

3.9 Summary

The research method utilized in this study was a quantitative and qualitative non-experimental descriptive study design. Quantitative data was acquired from the eye clinic register and questions 1-8 of the nurse participant interview. The results of the data are displayed in charts, tables and graphs in the next chapter. The qualitative data was obtained from questions 9-10 of the interview and are presented in the form of descriptive analysis.
CHAPTER 4

RESULTS

4.1 Introduction

The analyzed data from the research will be presented in this chapter. The research will answer the following questions:

What is the prevalence of refractive errors and patients requiring refractive services at 15 eye clinics in the Amathole, Chris Hani, Joe Gqabi and OR Tambo Districts of the Eastern Cape?

What eye services were available to patients attending the 15 health care facilities where the clinics were conducted?

Can nurses make a valuable contribution in assisting patients with refractive errors?

This chapter will commence with the demographic variables of the patients attending the 15 health facilities where the eye clinics were conducted. The demographic variables of the clinics will be followed by the results obtained from Vision Care's clinic register and some of the results that are obtained from the nurse participants.

The second part of the chapter will describe the demographic variables of the nurses' participants followed by the qualitative results presented in a descriptive analysis.

4.2 Presentation of findings

4.2.1 Demographic profile of eye clinics

The Demographic variables include; total of patients seen, gender, mean age and range. These results are recorded next to the name of the health facility where the eye clinic was conducted. The health facilities are listed under the four district municipalities where the health facilities are located. The results cover the period of January 2010 to June 2010.
### Table 2

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Male</th>
<th>Female</th>
<th>Mean Age</th>
<th>Range of Age</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Amathole D. M.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Butterworth Hospital</td>
<td>197</td>
<td>65</td>
<td>132</td>
<td>57</td>
<td>6-90</td>
</tr>
<tr>
<td>Dutywa Health Centre</td>
<td>82</td>
<td>31</td>
<td>51</td>
<td>49</td>
<td>6-83</td>
</tr>
<tr>
<td>Madwaleni Hospital</td>
<td>48</td>
<td>17</td>
<td>31</td>
<td>45</td>
<td>6-83</td>
</tr>
<tr>
<td>Willowvale Health Centre</td>
<td>46</td>
<td>14</td>
<td>32</td>
<td>48</td>
<td>4-72</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>373</td>
<td>127</td>
<td>246</td>
<td>49.75</td>
<td>4-90</td>
</tr>
<tr>
<td><strong>Chris Hani D.M.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All Saints Hospital</td>
<td>6</td>
<td>1</td>
<td>5</td>
<td>59</td>
<td>41-75</td>
</tr>
<tr>
<td>Cala Hospital</td>
<td>81</td>
<td>22</td>
<td>59</td>
<td>53</td>
<td>8-88</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>87</td>
<td>23</td>
<td>64</td>
<td>56</td>
<td>8-88</td>
</tr>
<tr>
<td><strong>Joe Gqabi D.M.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taylor Bequest Hospital</td>
<td>173</td>
<td>56</td>
<td>117</td>
<td>52</td>
<td>1-99</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>173</td>
<td>56</td>
<td>117</td>
<td>52</td>
<td>1-99</td>
</tr>
<tr>
<td><strong>O.R. Tambo D.M.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mhlakulo Health Centre</td>
<td>156</td>
<td>27</td>
<td>129</td>
<td>45</td>
<td>1-89</td>
</tr>
<tr>
<td>Nessie Knight Hospital</td>
<td>141</td>
<td>44</td>
<td>97</td>
<td>60</td>
<td>10-92</td>
</tr>
<tr>
<td>Port St Johns H. Centre</td>
<td>47</td>
<td>14</td>
<td>33</td>
<td>37</td>
<td>1-70</td>
</tr>
<tr>
<td>Qumbu Health Centre</td>
<td>98</td>
<td>26</td>
<td>72</td>
<td>51</td>
<td>1-86</td>
</tr>
<tr>
<td>St Barnabas Hospital</td>
<td>163</td>
<td>52</td>
<td>111</td>
<td>50</td>
<td>4-93</td>
</tr>
<tr>
<td>St Elizabeth Hospital</td>
<td>201</td>
<td>61</td>
<td>140</td>
<td>48</td>
<td>7-92</td>
</tr>
<tr>
<td>St Lucys Hospital</td>
<td>129</td>
<td>37</td>
<td>92</td>
<td>55</td>
<td>4-89</td>
</tr>
<tr>
<td>Tombo Health Centre</td>
<td>7</td>
<td>5</td>
<td>2</td>
<td>43</td>
<td>19-64</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>942</td>
<td>266</td>
<td>676</td>
<td>48.6</td>
<td>1-93</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>1575</td>
<td>472</td>
<td>1103</td>
<td>51.58</td>
<td>1-99</td>
</tr>
</tbody>
</table>

From the above table the following is noted:

A total of 373 patients were seen at the four health facilities under Amathole District Municipality. 127 patients were male and 246 were female. There was a mean age of 49.75 and the range of age was 4-90. Data was gathered from two clinics conducted at Dutywa Health Centre, one at
Butterworth Hospital, Madwaleni Hospital and Willowvale Health Centre.

Two health facilities fell under Chris Hani District Municipality. The results are from one clinic conducted at Cala Hospital and one clinic conducted at All Saints Hospital in Engcobo. A total of 87 patients were seen: 23 were male and 64 female, the mean age was 56 and the range of age was 8-88.

Only one health facility fell under Joe Gqabi District Municipality and the data was gathered during two clinic dates: of the 173 patients seen, 56 were male and 117 were female. The mean age was 52 and the range of age was 1-99.

A total of 8 health facilities fell under the region of OR Tambo District Municipality. Results are from two clinics conducted at Nessie Knight Hospital in Sulenkama, two clinics at St Elizabeth Hospital in Lusikisiki, two clinics at St Lucy’s Hospital near Tsolo, two clinics at St Barnabas Hospital in Libode, one clinic at Mhlakulo Health Centre, one clinic at Port St Johns Health Centre, one clinic at Qumbu Health Centre and one clinic at Tombo Health Centre. A total of 942 patients were seen, 266 were male and 676 were female, the mean age was 48.6 and the range of age was 1-93.

4.2.2 Prevalence of refractive errors and patients requiring refractive services

The following tables present the results of the data collected from Vision Care’s eye clinic register. The first column shows the number of patients seen per health facility; the second column shows the number of patients that were issued with clinic spectacles. The patients issued with clinic spectacles had a basic refractive error that could be assisted with a pair of clinic spectacles. This means that the patient put on a pair of clinic spectacles and could immediately see an improvement in their vision. The third column shows the number of patients that were referred to an optometrist for a full refraction. As explained in chapter 3, the optometrist performing the screening service estimated that 95% of the patients that were referred for refraction services had a refractive error and 5% had an eye condition involving pathology. As previously mentioned the clinic environment does not afford the optometrist the time or resources (equipment) to perform a full refraction service. The fourth column shows the patients that were referred to an
ophthalmologist for further treatment. These are usually patients with cataracts, glaucoma or other eye pathology that need the expertise of an ophthalmologist.

**Table 3**

<table>
<thead>
<tr>
<th>Clinic</th>
<th>Patient Total</th>
<th>Issued with clinic specs</th>
<th>Referred to Optometrist</th>
<th>Referred to Ophthalmologist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amathole D.M.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Butterworth D.H.</td>
<td>197</td>
<td>48</td>
<td>111</td>
<td>2</td>
</tr>
<tr>
<td>Dutywa H.C.</td>
<td>82</td>
<td>9</td>
<td>44</td>
<td>5</td>
</tr>
<tr>
<td>Madwaleni H.</td>
<td>48</td>
<td>8</td>
<td>24</td>
<td>13</td>
</tr>
<tr>
<td>Willowvale H.C.</td>
<td>46</td>
<td>8</td>
<td>24</td>
<td>1</td>
</tr>
<tr>
<td>Sub total</td>
<td>373</td>
<td>73</td>
<td>203</td>
<td>21</td>
</tr>
</tbody>
</table>

| Chris Hani D.M. | | | | |
| All Saints H. | 6 | 0 | 2 | 0 |
| Cala H. | 81 | 15 | 42 | 15 |
| Sub total | 87 | 15 | 44 | 15 |

| Joe Gqabi D.M. | | | | |
| Taylor Bequest H. | 173 | 44 | 87 | 31 |
| Sub total | 173 | 44 | 87 | 31 |

| O.R. Tambo D.M. | | | | |
| Mhlakulo H.C. | 156 | 3 | 118 | 12 |
| Nessie Knight H. | 141 | 22 | 65 | 35 |
| Port St Johns H.C. | 47 | 8 | 34 | 7 |
| Qumbu H. C. | 98 | 29 | 55 | 23 |
| St Barnabas H | 163 | 22 | 95 | 38 |
| St Elizabeth H. | 201 | 60 | 91 | 0 |
| St Lucys H. | 129 | 26 | 68 | 32 |
| Tombo H. C. | 7 | 1 | 5 | 2 |
| Sub total | 942 | 171 | 531 | 149 |

| Clinic Totals | 1575 | 303 | 865 | 216 |

*Table 5 shows that 1575 patients were seen at the 15 health facilities where the Vision Care eye clinics were conducted,*
303 patients (19.2%) were assisted with a pair of clinic spectacles, 865 patients (54%) required the services of an optometrist and 216 patients (13.7%) required the services of an ophthalmologist. Therefore 865 patients would have benefited from refraction services.

The following table shows the breakdown of clinic results into district municipalities.

**Graph**

At the health facilities falling under Amathole District Municipality, out of the 373 patients seen, 73 (19.57%) required clinic spectacles, 203 (54.4%) were referred to an optometrist and 21 (5.6%) were referred to an ophthalmologist.

At the health facilities falling under Chris Hani District Municipality, out of the 87 patients seen, 15 (17.2%) required clinic spectacles, 44 (50.5%) were referred to an optometrist and 15 (17.2%) were referred to an ophthalmologist.

At the health facilities falling under Joe Gqabi District Municipality, out of the 173 patients seen, 44 (25.4%) required clinic spectacles, 87 (50.2%) were referred to an optometrist and 31 (17.9%) were referred to an ophthalmologist.
There were 942 patients seen at health facilities that fell under OR Tambo District Municipality. 171 patients (18.1%) required clinic spectacles, 531 (56.3%) were referred to an optometrist and 149 (15.8%) were referred to an ophthalmologist.

To answer the research question: The prevalence of refractive errors at the 15 eye clinics situated in the Amathole, Chris Hani, Joe Gqabi and OR Tambo District Municipalities of the Eastern Cape was (303)19.2% and (865)54% of the patients required refractive services.

The Vision Care optometrist explained that approximately 95% of the patients requiring refractive services would have a refractive error and the other 5% would be diagnosed with eye pathology after undergoing a full refraction service. Therefore we can say that the prevalence of refractive errors is approximately 71.41%.

4.2.3 Available eye services

This research question looks at the eye services they were available to the patients attending the 15 health facilities where the eye clinics were conducted.

The health facilities are again listed under their respective district municipalities. Two nurses from each health facility were asked the following questions and their answers are presented in Table 7 seen below.

**Question 1**

Does their health facility have a resident ophthalmologist, optometrist or ophthalmic nurse? These results were recorded in columns 1, 2 and 3 respectively.

**Question 2**

If a patient requires prescription spectacles, what distance would they need to travel to obtain them? This answer was recorded in column 4.

**Question 3**

Does your health facility have a stock of clinic spectacles to dispense? This result was recorded in column 5
### Table 4

<table>
<thead>
<tr>
<th></th>
<th>Col 1</th>
<th>Col 2</th>
<th>Col 3</th>
<th>Col 4</th>
<th>Col 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ophth</td>
<td>Optom</td>
<td>Ophthal</td>
<td>Distance</td>
<td>Clinic</td>
</tr>
<tr>
<td></td>
<td>nurse</td>
<td></td>
<td>nurse</td>
<td></td>
<td>specs</td>
</tr>
<tr>
<td><strong>Amathole D.M.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dutywa</td>
<td>no</td>
<td>no</td>
<td>yes (1)</td>
<td>0</td>
<td>yes</td>
</tr>
<tr>
<td>Butterworth</td>
<td>no</td>
<td>yes (1)</td>
<td>yes (2)</td>
<td>0</td>
<td>no</td>
</tr>
<tr>
<td>Malwaleni</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>75kms</td>
<td>no</td>
</tr>
<tr>
<td>Willowvale</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>60kms</td>
<td>no</td>
</tr>
<tr>
<td><strong>Chris Hani D.M.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cala</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>143kms</td>
<td>no</td>
</tr>
<tr>
<td>All Saints</td>
<td>no</td>
<td>no</td>
<td>yes (2)</td>
<td>108</td>
<td>no</td>
</tr>
<tr>
<td><strong>Joe Gqabi D.M.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taylor Bequest</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>80kms</td>
<td>no</td>
</tr>
<tr>
<td><strong>O.R. Tambo D.M.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nessie Knight</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>90kms</td>
<td>no</td>
</tr>
<tr>
<td>St Elizabeth</td>
<td>no</td>
<td>no</td>
<td>yes (1)</td>
<td>64kms</td>
<td>no</td>
</tr>
<tr>
<td>St lucys</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>55kms</td>
<td>no</td>
</tr>
<tr>
<td>St Barnabas</td>
<td>no</td>
<td>no</td>
<td>yes (1)</td>
<td>30kms</td>
<td>no</td>
</tr>
<tr>
<td>Mhlakulo</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>23kms</td>
<td>no</td>
</tr>
<tr>
<td>Port St Johns</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>95kms</td>
<td>no</td>
</tr>
<tr>
<td>Qumbu</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>60kms</td>
<td>no</td>
</tr>
<tr>
<td>Tombo</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>75kms</td>
<td>no</td>
</tr>
</tbody>
</table>

The results from question 1 were as follows: None of the health facilities had a resident ophthalmologist. Only Butterworth District Hospital had a resident optometrist. The following health facilities reported having ophthalmic trained nurses: All Saints Hospital (2), Butterworth District Hospital (2), Dutywa Health Centre (1), St Barnabas Hospital (1), and St Elizabeth Hospital (1). This gives a total of 7 ophthalmic trained nurses.

The results of question 2 were as follows: Patients from Dutywa Health Centre and Butterworth District Hospital did not need to travel any significant distance to obtain prescription spectacles as there was at least one resident private optometrist in their town. Patients from Cala Hospital needed to travel the furthest to obtain prescription spectacles with a distance of 143 kms. The mean distance that patients were required to travel to obtain prescription spectacles was 63.8 kms.
Each of the yellow flags represents the distance that a patient would need to travel from 13 of the 15 health facilities to access an optometrist and prescription spectacles. The other two health facilities (Butterworth District Hospital and Dutywa Health Centre) had a private optometrist in the town.

The results of question 3 were as follows: only Dutywa Health Centre had a stock of clinic spectacles to dispense. It is unfortunate to note that Butterworth District Hospital does not dispense clinic spectacles although they have a resident optometrist. Many patients attending the Butterworth eye clinic could be assisted with clinic spectacles if they were available for dispensing.
**Question 4**

Do any eye services non-governmental or other visit your health facility?

Result recorded in below in Table 8

**Key**

F.H.F. – Fred Hollows Foundation  
S.A.B.P.B. – South African Bureau for the Prevention of Blindness

The Fred Hollows Foundation, the South African Bureau for the Prevention of Blindness and the Small Projects Foundation are primarily involved in the eradication of cataracts

**Table 5**

<table>
<thead>
<tr>
<th>Eye services</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Amathole D.M.</strong></td>
</tr>
<tr>
<td>Dutywa</td>
</tr>
<tr>
<td>Butterworth</td>
</tr>
<tr>
<td>Malwaleni</td>
</tr>
<tr>
<td>Willowvale</td>
</tr>
</tbody>
</table>

| **Chris Hani D.M.** |
| Cala | Vision Care |
| All Saints | Vision Care, S.A.B.P.B. |

| **Joe Gqabi D.M.** |
| Taylor Bequest | Vision Care |

| **O.R. Tambo D.M.** |
| Nessie Knight | Vision Care |
| St Elizabeth | Vision Care, F.H.F. |
| St Lucys | Vision Care |
| St Barnabas | Vision Care, Small Projects Foundation |
| Mhlakulo | Vision Care |
| Port St Johns | Vision Care, Small Projects Foundation |
| Qumbo | Vision Care |
| Tombo | Vision Care, Small Projects Foundation |

**Results of Question 4 - are as follows:**

Vision Care visits all of the 15 health facilities. The optometrist dispenses basic clinic spectacles at a price of R50. Patients that require a full refraction
are referred to an optometrist. Patients that require the assistance of an ophthalmologist are referred to an ophthalmologist.

Dutywa and Willowvale Health Centre have an optometrist that visits once a month. The optometrist dispenses clinic spectacles at a nominal fee.

A private/public ophthalmologist visits Butterworth District Hospital and performs cataract extractions periodically.

The Fred Hollows Foundation visits Butterworth District Hospital, Dutywa Health Centre and St Elizabeth’s Hospital and is involved in the eradication of cataracts.

The South African Bureau for the Prevention of Blindness visit All Saints Hospital.

The Small Projects Foundation visits St Barnabas Hospital, Port St Johns Health Centre and Tombo Health Centre and is involved in the eradication of cataracts.

**Question 5**

Do you refer all patients visiting your health facility with eye conditions to an NGO service?

Answer yes, no or sometimes

**Table 6**

<table>
<thead>
<tr>
<th>Answer</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>5</td>
</tr>
<tr>
<td>No</td>
<td>9</td>
</tr>
<tr>
<td>Sometimes</td>
<td>16</td>
</tr>
</tbody>
</table>

**Question 6**

Is the NGO able to assist most of your patients with eye conditions?

Answer yes, no or sometimes

**Table 7**

<table>
<thead>
<tr>
<th>Answer</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>23</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
</tr>
<tr>
<td>Sometimes</td>
<td>5</td>
</tr>
</tbody>
</table>

The results of table 5 are ambiguous and do not indicate clearly how much or now little assistance the NGOs are providing. The results of table 6 are much clearer with 23 out of 30 nurses answering that NGOs assist most of their patients with eye conditions. This result shows that NGOs are the
predominate provider of eye care to patients with eye conditions and play a vital role in assisting patients.

4.2.4 Demographic variables of nurse participants

There were 30 nurse participants included in the study

Table 8

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional nurse</td>
<td>27</td>
</tr>
<tr>
<td>Enrolled nurse</td>
<td>2</td>
</tr>
<tr>
<td>Nursing assistant</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
</tr>
</tbody>
</table>

Professional nurse qualifications

The 27 professional nurse participants had the following nursing qualifications in addition to a general nursing qualification.

Table 9

<table>
<thead>
<tr>
<th>Category</th>
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<td>Clinical nursing assessment &amp; care</td>
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Results of table 7 and 8 show that 27 of the 30 nurses interviewed were professional nurses, two were enrolled nurses and 1 was a nursing assistant. The results were consistent in spite of the wide range of additional nursing qualifications that the professional nurses held. This shows that additional nursing qualifications were not a factor in determining if nurses felt that that
could be trained to perform refractions and dispense spectacles or if this intervention would have a positive impact on eye care.

**Years of experience**

The range of years of experience was 2-37. The mean years of experience was 17.7. The results showed that years of experience was not a factor in determining whether nurses were more or less likely to show an interest in acquiring refractive training and providing spectacles.

**4.2.5 Nursing contribution**

The nurse participants were asked the following question:-

Nurses can be trained to perform eye refractions and dispense spectacles
Do you: strongly agree/ agree/ not sure / disagree / strongly disagree

17 answered strongly agree
11 answered agree
1 answered not sure
1 answered disagree

Nurses who answered with strongly agree gave the following reasons which have been grouped thematically:

**Lack of services**

- there is a shortage of optometrists
- optometrists are scarce
- there is a shortage of this type of service
- there are no specialists to help
- the patients are suffering while they are waiting for assistance
- patients must wait long periods between vision care visits, to be helped
- we have only one ophthalmic nurse and there is too much for her to do as she is responsible for other services

**Distance to services and lack of funds**

- patients have insufficient funds
- the clients do not have money to visit hospital
- we are in remote areas
- so the patients can be helped closer to where they live
- patients must travel to Mthatha for assistance
- this service needs to be more accessible for patients
- it would help patients a lot if this service was offered at our health facility
Nurses providing services

- nurses are the ones that provide primary nursing care
- so nurses can help people with eye problems
- to be able to attend clients with eye problems
- nurses can learn these skills
- it is better to have nurses trained for this purpose
- other centres have done it!
- I know it is possible because I have undertaken the refraction course offered by the ICEE
- nurses are on hand to help patients
- nurses have the capability to learn if they are trained

The nurses that answered with **agree** gave the following reasons which have been recorded thematically:

**Lack of accessibility**

- the centre is far from Mthatha
- the patients all have to go to Mthatha
- we are reliant on NGOs and they take time to come
- they only have one doctor

**A need for services**

- there is a need
- so they can help patients in the rural areas
- because of all the patients with eye problems
- because there is a need
- patients need these services especially in the rural areas

**Training of nurses**

- nurses must be ophthalmic trained
- so nurses can do more to help
- I have undertaken the training in refraction offered by the ICEE
- it would be possible if there was advanced training
- the nurses can be trained
- if the nurses are trained then the patients can be treated at the health facility
- I agree if the nurses are properly trained

The nurse that answered with **not sure** gave the following reason:
I am doubtful that it would work as we would need space, equipment and staff to provide such a service – there would need to be a program.

The nurse that answered with disagree gave the following reason:

Without the proper equipment and resources it will be impossible – there would need to be proper training for the nurses of more than one year and the machines to do the testing – to order the lenses for the spectacles will be a problem.

The nurse participants were then asked the following question:-

Would training nurses in refraction have a positive impact on eye care? Yes or No

29 answered yes
1 answered no

The nurses that answered yes gave the following reasons which are again recorded thematically:

**Benefit to optometrists**

-It will even assist the optometrists as they are far and reduce their workload
-This will reduce the working load on the Vision Care personnel

**Benefit to community**

-because the community will benefit a lot, at the moment the patients are waiting for a long time
-It will provide accessibility and affordability and the community will benefit in general
-every nurse will be able to give health education and participate in eye care awareness

**Benefit to the patient**

**Patient's assisted immediately**

- the patients would be helped immediately
- the patients will now be helped when they come to our facility
- the patients could be attended to at the appropriate time
- clients could be seen immediately
- many patients that were not helped before could now be helped
- nurses wouldn't have to wait for the doctor to come help the patients
- those patients of low socioeconomic status can get spectacles at nearest facilities

**Reduce waiting time, travel and costs**

- patients would not have to travel to Mthatha anymore
- it will save more time for the patients
- save time and money
- at affordable costs
- otherwise clients have no money and must wait for grant which results in a big delay for treatment
- otherwise, patients wait a long time
- the hospital books patients to travel to Mthatha but when they come, the combie is full and they don't have money to travel on their own

**Prevent suffering from eye conditions**

- this would prevent complications
- many clients can be given management and treatment early
- the patients will be able to see better
- people who are suffering with the eyes will benefit from those services
- early detection of abnormalities
- it will help patients not to loose their eyesight
- for more attention and care
- some people in the rural areas have eye problems
- because of all the eye conditions and problems
- because clients do have eye problems
some blindness is caused by untreated refractive errors

Structured program

-If the nurses were solely doing refraction with a positive laid out policy then it would have a strong positive impact
-I am a refractionist but even if I refract, spectacles will not be available except for near vision readers
-the spectacles will be affordable and the program accessible to clients

The nurse who answered no gave the following reason:-

The situation will remain the same

Three nurses that have undergone the ICEE refraction training program which lasted 6 weeks were interviewed by the researcher and the following reasons were reported for the failure of the ICEE training program:

After the training nurses were assigned back to the general wards and not given an opportunity to refract as their services were required elsewhere.

There were no hospital policies in place for the nurses to refract and dispense spectacles.

Nurses were given a free supply of clinic glasses from ICEE that they were not allowed to dispense due to hospital policy.

Nurses had no mandate to take money from hospital patients although the money would have paid for a new supply of clinic glasses from the ICEE that would have resulted in the service becoming self-sustaining.

The nurses also stated that they would need a refresher course if they were allowed to refract again as they had lost their skills.

They were also concerned whether spectacles would be available if they were allowed to refract.
4.3 Summary

This chapter has provided the results of the research questions. The prevalence of patients with refractive errors at the 15 eye clinics in the Amathole, Chris Hani, Joe Qqabi and OR Tambo Districts of the Eastern Cape is 19.2% and 54% required refractive services. It is estimated that approximately 71.41% of the patients had refractive errors. The eye services that are available to the patients attending the 15 eye clinics have been presented in this chapter in table form. 28 out of the 30 nurses that were interviewed responded that they ‘agreed’ or ‘strongly agreed’ that nurses could be trained to perform eye refractions and dispense spectacles and their reasons have been provided. Two out of the 30 participants were ‘not sure’ or ‘disagreed’ that nurses could be trained to perform eye refractions and dispense spectacles and their reasons have been provided. Three nurses that had undertaken the ICEE refraction training program were interviewed and their views, concerns and recommendations have been presented. Chapter 5 will provide a discussion on the results.
CHAPTER 5

DISCUSSION, IMPLICATIONS AND LIMITATIONS

5.1 Introduction

This chapter discusses the results presented in chapter four. The chapter will start with a brief comparison between this research and earlier studies. The research questions will then be addressed. This will include a discussion of the findings in relation to the three research questions and implications for their practice.

The research questions were: what is the prevalence of refractive errors and patients requiring refractive services at 15 eye clinics in the Amathole, Chris Hani, Joe Gqabi and OR Tambo Districts of the Eastern Cape? What eye services are available to patients attending the 15 health care facilities where the clinics were conducted? Can nurses make a valuable contribution in assisting patients with refractive errors? The chapter will conclude with the limitations of the study followed by a summary and recommendations for further studies.

5.2 Relation to earlier studies

The researcher did not find any studies on the prevalence of refractive errors and patients requiring refractive services because all studies done on the prevalence of refractive errors use specific criteria for diagnosing myopia, hyperopia and astigmatism as the main criteria. The researcher was reliant on Vision Care’s clinic register that did not provide specifics of the patients’ refractive error but only that the patient was identified as having a refractive error or requiring refractive services.

The Vision Care optometrist used the following criteria for diagnosing a refractive error and patients requiring refractive services:

A refractive error is measured as myopia (≥ -0.75 diopters) hyperopia (≥ +0.75 diopters) astigmatism (≥ -0.50 of cylinder). All the patients that were identified as having a refractive error fell into the above category and most of the patients that were referred to an optometrist also fell into this category. The optometrist explained that an estimated 95% of the patients that were referred for refraction services would have a refraction error and an estimated 5% would be identified as having eye pathology after undergoing a full
refraction service. This means that approximately 71.41% of the patients had a refractive error.

Some of the studies reviewed were conducted at eye clinics and their research is the most comparable with this study. A study to determine the distance refractive error among Aboriginal people attending eye clinics in remote South Australia in 2007, found that 34% of the patients attending had clinically significant refractive errors. A refractive error was defined as myopia (> -0.5 diopters) hypermetropia (> +0.5 diopters), astigmatism (cylinder at least -0.5 diopters) and anisometropia (difference of >0.5 diopters) (Darwin, Tan, Casson, Selva & Newlands, 2007)

In a study ‘Refractive error Status in Bayelsa State, Nigeria’ between, January 2004 and October 2005. The retrospective study took place in a government –subsidized eye clinic of the Niger-Delta. A refractive error was defined as myopia ≥ -0.50 diopters, hyperopia as ≥ +1.00 diopters while astigmatism was defined as ≥ -0.25 diopters. The study found that 54.28% had significant refractive errors. (Koroye-Egbe, Ovenseri-Ogbomo & Adio, 2010)

This means that the patients attending the Vision Care eye clinics had a higher percentage of refractive errors with 71.41% than the Aboriginal study in remote South Australia with 34% and Bayelsa State, Nigeria with 54.28%

There were no studies sighted of nurses being trained in performing refactorions. The only information documented on nurses being trained in refraction was found in Vision Aid Overseas (VAO) and Naidoo. (2010). According to Suzy Lamont (Sept, 2010) who is the International Programme Director for VAO, VAO started training nurses in refraction in Ethiopia in 2004 and in 2010 trained 15 nurses in refraction techniques. Another 10 nurses have been trained in refraction in Uganda. The training consists of a variation on the 4 x 2 weeks model with some form of supervision in-between in Ethiopia. (attachment F)

According to Naidoo (2010) who is the Global Programme Director for ICEE, the ICEE ran a training program for ophthalmic trained nurses in refraction from 2004-2008 which was discontinued due to various reasons. Reasons included the following:
-nurses were not allowed to refract when they returned to their respective hospitals or clinics as they didn’t have the mandate to do so.
-some nurses became too reliant on autorefractor readings and did not have enough experience or skills to operate in relative isolation
-nurses did not have spectacles to dispense or funds to buy new ones

5.3 Prevalence of refractive errors and patients requiring refraction services

The research found that the prevalence of patients with refractive errors was 19.2% and the prevalence of patients requiring refraction services was 54%. According to the Vision Care optometrist screening the patients it can be estimated that approximately 71.41% of the patients had a refractive error.

The clinics had a mean age of 51.58 with a range of age of 1-99, showing that the clinics draw patients of all age groups. Females, attending the clinics, were more than double the number of males – 1103 females versus 475 males.

The patients must wait three to six months between Vision Care visits to be screened for refractive errors. Apart from the optometrist stationed at Butterworth Hospital and the monthly visits by an optometrist to Willowvale Health Centre and Dutywa Health Centre there is no other screening service available to patients. Dutywa Health Centre does keep a stock of clinic specs that they dispense. There were seven ophthalmic trained nurses employed at the 15 health facilities. It appeared that their ophthalmic training was not always utilized as their services were required in other areas of the clinic.

It can be assumed that the 54% of patients requiring refractive services will also require prescription spectacles. Patients will need to travel an average of 63.8kms to access a full refraction service at a private optometrist. The cost of a full refraction service plus prescription spectacles are estimated to start at R800. This is against the backdrop of extreme poverty where there is little extra money for transport and spectacles. Many of the patients are financially reliant on social grants.
5.4 Available eye services

The 15 health facilities are visited by Vision Care between two and four times a year. Vision Care provides a screening service for eye conditions. Patients with eye pathology are referred to an ophthalmologist. Patients that required refraction services are identified and referred to an optometrist for refraction. Patients identified with a basic refraction error are assisted (on the spot) with clinic spectacles (19.2%). Butterworth hospital has a resident optometrist. The optometrist is able to refract patients but does not have a stock of clinic specs to dispense nor does he have resources to provide patients with prescription spectacles. It is a pity that his services are not better utilized. The optometrist from Butterworth also visits Dutywa and Willowvale Health Centres on a monthly basis. At these clinics he is able to dispense clinic spectacles.

The Fred Hollows Foundation (FHF) visits Dutywa Health Centre, Butterworth Hospital, and St Elizabeth Hospital. The Fred Hollows foundation identifies patients with cataracts and arranges for patients to be transported to the Sabona Centre of Excellence at the Frontier Hospital in Queenstown for cataract extraction.

The Small Projects foundation visits St Barnabas Hospital, Port St Johns Health Centre and Tombo Health Centre. They screen patients for cataracts and arrange for them to be transported to the Sabona Centre of Excellence for cataract extraction.

The South African Bureau for the Prevention of Blindness (SABPB) visits All Saints Hospital and is also primary involved in cataract extraction. When they were phoned on the 18/05/2010 their services to the Amathole, Chris Hani, Joe Gqabi and OR Tambo District Municipalities had been temporality suspended due to non-payment by the government.

There is a public/private ophthalmologist that visits Butterworth Hospital on a periodic basis and performs some cataract extractions on hospital patients in exchange for using the theatre time to also operate on his own private clients.

It is evident that while there are several organizations providing valuable assistance with cataract extractions, there is little provided in the way of refraction services in the same area.
5.5 Can nurses make a valuable contribution towards assisting patients with refractive errors?

The research found that 17 out of 30 nurses participating in the study ‘strongly agreed’ that nurses could be trained to perform eye refractions and dispense spectacles. 11 out of 30 ‘agreed’ with this statement, while one out of 30 was ‘not sure’ and one out of 30 ‘disagreed’ with this statement. Therefore 28 out of 30 either ‘strongly agreed’ or ‘agreed’ with the statement that nurses could be trained to perform eye refractions and dispense spectacles. This shows that there is willingness among nurses to learn new skills and undergo the necessary training to assist their patients. The nurses emphasized the lack of refractive services in their areas. They explained that patients had meagre funds and had to wait long periods for the optometrist to visit their health facilities because they were in remote areas. They felt that their patients endured suffering in their struggle to access these services.

29 out of the 30 participating nurses agreed that if nurses were trained to provide refraction services and dispense spectacles, this would have a positive impact on eye care. The overwhelming majority thought nurses could make a significant contribution towards assisting patients with refractive errors if they were equipped with the appropriate skills and training.

5.6 Implication for practice

Chapter 2 described a program of training nurses in refraction that was implemented by Vision Aid Overseas (VAO) in Zambia. Mitchell (2010) who is the Training and Education Manager for the VAO program explains that by the last week of training most of nurses are able to carry out a competent refraction on all but the most complicated of cases. Mitchell also emphasized the need for nurses to refract regularly, explaining that nurses learn best in the clinical situation.

The VAO experience showed that nurses could make a valuable contribution towards refractive errors if they were provided with the appropriate skills, knowledge and training. Nurses would also have to be given the assurance from authorities that they would be able to refract regularly. Most importantly there would need to be some way of being able to supply the spectacles to fill the spectacles prescriptions otherwise the problem will not be addressed.
Some health professionals have expressed concern about nurses entering a field which has historically been considered the domain of optometrists. Optometrists should not feel threatened by the idea of nurses being trained in refraction. As health professionals we are striving to provide patients with the highest level of health that they can obtain. This philosophy should include those people who are least able to help themselves.

All nursing roles have been fashioned out of societies needs. Some nurses are trained to be midwives. This training was initiated because there was a need for nurses to be able to deliver babies. This does not mean however that we do not need obstetricians. Midwives and Obstetricians happily coexist in our medical facilities today. Midwives in the rural areas are able to perform routine deliveries referring the more complicated cases to an obstetrician.

5.7 Implications for research

Further research is necessary to understand the adverse effects and general impact of refractive errors in impoverished communities and the practicality of implementing an accessible and affordable refractive program that can assist the most disadvantaged in South Africa. A cost benefit analysis which analyses the economic and social cost of not correcting refractive errors versus the financial cost of rolling out large scale refractive error correction programs is also needed. It is submitted that while there is a duty on the state to do everything within its available resources to respect the population's constitutional right to health care, there is also an economic incentive for the state to ensure that the general population has good eye health care. A better understanding of the cost of not correcting refractive errors would help shape policy in this field.

This study has shown that there is a high prevalence of refractive errors that go untreated for long periods in four municipal districts of the Eastern Cape. The study and analysis of pilot projects to train nurses to perform refractions would provide valuable insight into the practicality of rolling out such a program on a larger scale.

A population based study to identify the prevalence of refractive errors in South Africa would also provide the
authorities with a solid foundation for assessing the refractive error requirement of its citizens.

5.8 Limitations of the study

The study was limited to only 15 health facilities situated in the Amathole, Chris Hani, Joe Gqabi and OR Tambo District Municipalities. Another area might yield different results but it is submitted that the sample was large enough to give an accurate picture of the situation in rural, economically impoverished areas of South Africa.

The study examined general clinic records and was not able to provide specifics on refractive errors such as the prevalence of myopia, hyperopia and presbyopia among the population. The study provided only an estimate on the prevalence of refractive errors among the 15 eye clinics. It would have been preferable to work with more exact numbers. It would be good to know how many patients suffered from presbyopia within the population or if there was a high prevalence of astigmatism. The data collected only examined the prevalence of patients with a refractive error and patients that were referred for refractive services.

5.9 Summary

The research has revealed that 19.2% of the patients attending the clinics had refractive errors and 54% required refraction services with an estimated 71.41% having significant refractive errors. Patients wait 3 to 6 months to be screened for refractive errors. Once the patients are identified as requiring refraction services they must travel an average of 63.8kms to access refraction services. The costs can run into the hundreds or even thousands of rand when you consider the cost of transport, a full refraction service and spectacles. This is against the backdrop of extreme poverty, unemployment, poor infrastructure and reliance on social grants. Nurses have been trained in Zambia and Uganda to provide refraction services and this could be emulated in South Africa if nurses were given the training and resources and the mandate to refract. 28 out 30 nurse participants felt that nurses could be trained to perform refractions and dispense spectacles and 29 out of 30 nurses felt that this would have a positive impact on eye care.
5.10 Recommendations

- Further research on the cost effectiveness and general logistics of implementing a nurse coordinated refraction program including costs of training, equipment and resources

- Consultation with South African Nursing Council and the Health Professional Council of South Africa and other vital role players on the necessity of training nurse refractionists and implications for practice

- Defining the scope of practice of a nurse refractionist including the mandate of a nurse refractionist and her/his authority to practice.
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SAOA POSITION: NURSING SISTERS

Community Eyecare : Refractive Errors
Harry Rosen
29 September 2010

Taking cognisance of the challenges facing South Africa in terms of affordable, accessible and quality eye care to all South Africans, there is indeed an important and special role for nursing sisters within the arena of optometric services. It needs to be stated, however, that the performance of any professional acts within this context can only be rendered with the appropriate and required competency levels, i.e. competency as a result of the 4 year optometry course at a registered school of optometry.

Nevertheless, from a practical perspective, there is an important place for an auxiliary function under supervision of an optometrist over and above basic screening, details of which are yet to be defined.

There is a school of thought which incorporates the primary eye care worker within the optometric services career ladder. Once again, the role of the primary eye care worker would be auxiliary under supervision.

In terms of the future, the need of a scope evolution is paramount with (e.g.) optometry obtaining therapeuic privileges in the not too distant future. In this regard, as stated above, should a nursing sister assume responsibility for the performance of any professional act, she/he would need to comply with the standards and requirements related to scope of practice related to optometry.
Hi Fi

I am so sorry to hear about your Dad. I can only imagine the huge hole that his passing has left. Please pass on my love to your Mum and the rest of the family.

Well done for brushing the dust off the old nursing qualifications! Personally I think it's a great idea for nurses to perform refraction. When I came out to South Africa (in May 1987!) I was only a dispensing optician so I was not qualified to do refraction. Old Horace Thompson (I always remember your Dad laughing whenever he recalled Horace walking up your drive) initially told me I would be going to Vision Care mainly to teach others how to glaze. As it turned out I was required to refract (a topic I had covered briefly in my dispensing training but never expected to use). Dr Surka gave me a crash course for a couple of days and then I was set loose! Technically I was refracting under the supervision of Dr Surka but that never actually happened.

Refraction is not a difficult skill to learn and is mostly a question of practice. In the UK there are now courses for dispensing opticians (especially those fitting contact lenses) to learn how to refract. Even orthoptists (who deal with binocular vision problems) can perform refraction. I see no reason why nurses should not be able to refract with the right training, but optometrists can be a funny bunch and can get jealous of what they see as their area of expertise.

I have attached a pdf file on 'The nature, scope and value of ophthalmic nursing', which doesn't mention refraction as such, but does emphasise the increasing scope of competencies that the RCN feel ophthalmic nurses ought to be trained for. I remember Dr Surka talking about training ophthalmic nurses in rural hospitals to perform cataract surgery!

You may do well to get in touch with the Royal College of Nursing (if you haven't already) and also the South African Nursing Council. In the UK there is a big emphasis on multi-disciplinary teams, which are made up of different health care professionals working together in order to provide the best patient care. Many of the roles of these professionals overlap or are complimentary. You may also want to ask the Ophthalmological Society of SA and the SA Optometric Association to see what their views are. Don't be surprised if the optometrists are not very keen!

I don't know of any ophthalmic nurses who refract, but in the UK the hospitals generally employ optometrists too, so they don't need to. In areas of the world where there are few optometrists available then an ophthalmic nurse would be a good alternative. I think you'd enjoy the ophthalmic nursing course.

Things here are going well (now!) In the March after we visited you (2007), I got very sick and was diagnosed with bacterial endocarditis! I ended up spending 6 weeks in Harefield Hospital on IV antibiotics every 4 hrs! The bacteria chewed a hole in my mitral valve and this started to have an adverse affect on my heart so last March they took me back into Harefield for mitral valve repair surgery. Fortunately the heart surgery went ok (after also getting a lung infection!) and now things are pretty much back to normal.
I'm still at Specsavers and ticking along nicely. Brigitta is studying linguistics at Herts Uni and Ben (who will be 15 in June!) will be doing his GCSEs next year. Ian is at Portsmouth Uni doing film studies. We've got 2 flat-coat retrievers now (our first one got hit by a car and killed in Sept 08) and they're both very stupid but very loving. Our home life is mostly spent walking the dogs and dragging Ben off the computer!

I can't believe how quickly time passes. It's lovely to hear from you again. Let me know how you get on with the refraction issue.

I'll try and send you some photos at some point (it'll give you a laugh!)

Give my love to the whole family; I'd love to hear how you're all doing.

Love to Pierre and the kids.

Daniel

Got a cool Hotmail story? Tell us now
Fiona Webber

From: "Karin Lecuona" <Karin.Lecuona@uct.ac.za>
To: "Fiona Webber" <fiona@border.co.za>
Sent: Tuesday, February 16, 2010 3:42 PM
Subject: Re: nurses in refraction??

Dear Fiona,

I am glad someone was interested in the situational analysis! It was quite a wordy affair!

A few thoughts:

Ophthalmic nursing has a couple of major obstacles. In the first place, the Nursing Council has been very tardy in recognising the course, and subsequently the Provincial authorities have not recognised them as an entity. Secondly, policy has been to create generalists. In the times of shortages of nurses, managers were reluctant to allow ophthalmic nurses to perform just eye care whilst there was, for instance, a shortage of nurses in the maternity ward. It will take a number of sustainable successful projects to convince the authorities to change their ideas.

Optometrists are threatened by the thought of nursing practitioners doing refractions. There is a large push for optometrists to be appointed in the state which may (or may not) solve the problem of refractions services for the poor. (The difficulties encountered in the procurement trail are more problematical than acquiring the skill of performing a refraction). ICEE have the best of intentions and their programme is a real gift in other developing countries, but in our country which is bound by rules and regulations, the road of an ophthalmic nurse into the refraction domain will be difficult.

These are my personal views, and I will be very pleased if someone can prove me wrong.

If you would like to discuss the matter further, please phone me at home in the evening after 19h00.

My number is 0216895137.

Kind regards

Karin Lecuona

>>> "Fiona Webber" <fiona@border.co.za> 2010/02/11 11:28 AM >>>

Dear Ms Karin Lecuona,

I am a registered nurse and have been accepted to do my masters in nursing science education/community at the University of Fort Hare, East London this year. My area of interest is optometry. I worked for an NGO, Vision Care Optometrists, in Mthatha for 11 years and witnessed the eye care needs of the very poor. I was interested to read your analysis of eye care services in South Africa's public sector dated December 2007.

Would you be so kind as to advice me if there are any more recent statistics. I am also interested to hear if there are any new initiatives by government to meet the eye care needs of the people of South Africa. I read the National Guideline in refractive errors for persons 60 years and older. Do you know if this has been instituted?

My question is, how can nurses play a greater role in eye care? Your statistics from 2007 show that a mere 65 ophthalmic nurses are active in the public sector. It is also widely known that most optometrists are attracted to private practice and the affordability of spectacles is also a great concern.

The International Centre for Eyecare Education (ICEE) in Durban conducted a 6 week refraction course for ophthalmic nurses over a 5 year period. This course has since been discontinued as in many instances the nurses lacked the necessary support to consolidate their newly acquired skills and the spectacles to dispense.

I would be very grateful for any insight or thoughts you have in this area.

Sincerely,
Fiona Webber
0625579880
0437422909
Dear Elmien

Further to your request re information on VAO’s approach to training nurses in refractive error I can advise that we are starting to involve nurses in our training where possible. Here is an extract from our Trustee’s Report for 2009-10:

**Education**

The major investment in the optometry department at Chaineama School of Health Sciences in Lusaka, Zambia was supported through the development of a curriculum and programme delivery.

38 optometry students from Awassa University undertook clinical practice with volunteer supervisors at Awassa in Ethiopia and 20 doctors and 17 nurses were trained in refraction procedures.

We have also been training nurses in Zambia and here is an extract from a recent report by Karen Edwards, our Programme Director in Zambia (cc’d above in case you wish to follow up more with her).

**Kabwe**

In May Peter Howard and his team to set up a new Vision Centre at Kabwe general hospital. 3 nurses were trained in refraction (1 ophthalmic nurse and 2 general nurses who work in the eye department) and 3 people were trained as technicians although one will work mainly as a dispenser having been skilled in this area. We also trained 2 ophthalmic nurses for University Teaching Hospital (UTH) and one enrolled nurse with a long history of working in the eye department at Kasama general hospital.

A local British trained optometrist voluntarily supervises the 2 nurses at UTH one day a week. In Kabwe the nurses are supervised by an Ophthalmic Clinical Officer (OCO) who was previously trained in refraction by VAO. The nurse in Kasama is supported by the ophthalmologist there.

I have since made 2 follow up visits to Kabwe Vision Centre (VC). Things are going remarkably well and I have started to introduce a stock control system for frames. Two nurses refract on a full time basis with the OCO and the ophthalmic nurse refracting part-time.

I do hope this information is of help to Fiona Webber and her research.

With best wishes

Suzy Lamont
Programme Director - International
Vision Aid Overseas

☎ 01293 535016
✉ suzy.lamont@vao.org.uk
As requested, a fuller response about Vision Aid Overseas involvement in training nurses in refraction.

To set a bit of context, Vision Aid Overseas has trained nurses in the past, with a mixed result. The main problem has been the fact that refraction is never their main area of responsibility and tends to be the first thing that is ‘sacrificed’ when they are needed for other duties. However I do think they can have a very valuable role to play in areas which are, as you describe ‘underserved’.

However I think that it is crucial to ensure that certain criteria are met first of all before there is any training. There has to be some form of agreement and commitment that the nurses will be allowed to practice refraction regularly, and there will need to be some way of being able to supply the spectacles to meet the spectacle prescription. Ideally there needs to be a workshop that is able to make the spectacles to the correct prescription within reasonable travelling distance, or else at least a supply of quality ‘ready made’ spectacles in a range of ‘best sphere’ powers, especially low plus powers for presbyopes for reading and close work. There is nothing worse than raising expectations and then not being able to meet them.

We have trained nurses in the past using a programme of 4 to 5 visits over the course of a year, each lasting two weeks. The teams have consisted of UK trained and registered optometrists and dispensing opticians. The one big advantage that Vision Aid Overseas can provide is ‘on-the-job’ experience. We have found that the nurses learn best in a clinical situation working with patients under supervision. However this is supported by a mix of lectures, practical workshops, discussion groups and course work. The topics covered include - ‘Vision and Visual Acuity’, ‘Refractive Errors (definitions of myopia, hypermetropia, astigmatism, presbyopia etc). Lenses to correct refractive Errors , Best Sphere refraction, Retinoscopy, Cross-Cylinder technique, Full refraction, Binocular Vision, Low Vision. I have attached a page to show the order in which they are covered. Also attached is a sheet listing the sort of considerations required when setting up this type of training (the sheet attached actually relates to training high school graduates in refraction, but the experience was gained on a project training nurses so it is applicable to our discussion). Also attached is a manual that we provide to all the nurses/trainees which covers the syllabus. Trainees are also provided with a log book to record their work. I have also attached an example of the sort of Powerpoint presentation that we use for the lecture sessions as well as workshop and homework examples for this particular topic.

We always try and arrange supervision for the students to be able to practice refraction in the weeks between the training visits - that has not always been possible, so quite often the first couple of days of a training visit is doing a review of the material and a catch up session. However the experience has shown that by the end of the last visit, which is almost entirely supervised clinics most of the candidates were able to carry out a fairly competent refraction on all but the most complicated of cases.

Recently we had a team training ophthalmic nurses up in Tigray province in Ethiopia and they spent 4 consecutive weeks doing the initial training for 12 nurses. A couple of follow up teams are planned before the end of the year. So we are also continuously looking at ways of improving the training model.

We are currently undergoing a review of our training with the aim of producing a strategy to move this work forward over the next 5 year period. We are looking to providing links with accrediting bodies so that at the end of the training there is some form of examination and recognised qualification. This is not something we have been able to provide as yet but we have some interesting links with accrediting bodies in the UK and we are hopeful that this will be possible.

I think this covers most of the points I can think of. I hope it will be useful and if you have any further questions arising out of this please feel free to get back in touch with me.

I would love to hear how your project goes and what conclusions you come to. We are very interested in supporting research that helps provide documented evidence for the work that we are undertaking so if
we could see a copy of your Masters dissertation once you have had it marked and published, I would be very grateful.

With very best wishes

Peter Mitchell
Fiona Webber

From:  “Suzy Lamont" <suzy.lamont@vao.org.uk>
To:  "Fiona Webber" <fiona@border.co.za>
Cc:  "Peter Mitchell" <Peter.Mitchell@vao.org.uk>
Sent: Monday, September 06, 2010 3:19 PM
Subject: RE: nurses providing refractive services

Dear Fiona

Please accept my sincere apologies for the time it has taken me to respond to your email – I have no excuse except to say that my feet haven’t touched the ground since I started here a few months ago and I am only just starting to feel that I am on top of things.

To answer your questions:

1) When did the training of nurses start?
   We started training nurses in Ethiopia in 2004 and in the last year trained 15 nurses in refraction techniques. We have also trained some 10 nurses in Uganda but I cannot seem to find the details on this from our files on the shared drive but will ask the Programme Director for Uganda to see what she can tell me as it took place before I started here.

2) How long is the training and what does it entail?
   Currently the training is a variation on the 4 x 2 weeks model with some form of supervision in-between in Ethiopia. If you would like further information on the course content then I suggest you contact our Training and Education Manager, Mr Peter Mitchell (works for us one day a week) at peter.mitchell@vao.org.uk

3) Do you know any nurse that might be prepared to correspond with me?
   I will see if I can arrange for this to happen with one of the nurses we have trained in either Ethiopia or Uganda – the only two places where this training has taken place so far.

4) Do you know any other organizations/countries that are training nurses in refraction and where?
   Not as far as I know as we are the only organisation training nurses in refractive error in the countries in which we work.

5) Do you have a journal or website with any of this information? No, not at this stage

6) What are your most up-to-date statistics on the prevalence of refractive errors? The figure we always quote is 670 million people (10% of the world’s population) are disadvantaged by poor vision and a lack of glasses.

Again apologies for the delay but hope this is of use.

Best wishes

Suzy Lamont
Programme Director - International
Vision Aid Overseas

☎ 01293 535016
✉ suzy.lamont@vao.org.uk
✓ www.vao.org.uk
➢ Vision Aid Overseas, 12 The Bell Centre, Newton Road, Crawley, West Sussex, RH10 9FZ

Please do not print this unless you really need to
Application for clearance from the University of Fort Hare's Ethics Committee

Project Title: A study of the prevalence of refractive errors and patients requiring refractive services at 16 eye clinics in the Ukhahlamba, OR Tambo, Amathole and Chris Hani Districts of the Eastern Cape

Chief Researcher: Fiona Webber

Supervisor: Prof C Rautenbach

Co-supervisor: Luke Dutton

Date of application: 19 August 2010

Having consulted the Dean of Research, I hereby grant permission to conduct the research.

Professor J R Midgley
Deputy Vice-Chancellor
Chairperson of the interim Ethics Committee

23 August 2010
The Manager
Epidemiological Researcher Surveillance Unit
Eastern Cape Department of Health
6th Floor
Bisho

Dear Sir/ Madam

RE: REQUEST TO CONDUCT A RESEARCH STUDY

I hereby request permission from your office to allow me to conduct a research study on ‘the prevalence of refractive errors and patients requiring refractive services at 15 eye clinics in the Joe Gqabi, OR Tambo, Amathole and Chris Hani districts of the Eastern Cape’. The study will be conducted at the relevant eye clinics. The study is towards MSc Degree under the Department of Nursing Sciences in the University of Fort Hare.

The objectives are the following:

i. To identify patients with refractive errors and those requiring refractive services at 15 eye clinic conducted at District Hospitals and Community Health Centers

ii. To describe the refractive services that are available to patients attending health facilities where the eye clinics are conducted

iii. To explore the possibility of nurses providing refractive services independently or under the supervision of an optometrist

The information will be the property of Fort Hare University.
The summary of the research findings will be distributed to your office.

I hope my request will be highly considered

Regards,

F. Webber
Eastern Cape Department of Health

Enquiries: Zonawele Mente
Tel No: 040 609 3830
Date: 2nd September 2010
Fax No: 043 642 4405
E-mail address: zonawele.mente@ekhlas.e-prov.gov.za

Dear Ms Fiona Webber,

Re: A study of the prevalence of refractive errors and patients requiring refractive services at 16 eye clinics in the Ukhahlamba, OR Tambo, Amathole and Chris Hani districts of the Eastern Cape.

The Department of Health would like to inform you that your application for conducting a research on the abovementioned topic has been approved based on the following conditions:

1. During your study, you will follow the submitted protocol with ethical approval and can only deviate from it after having a written approval from the Department of Health.
2. You are advised to ensure, observe and respect the rights and culture of your research participants and maintain confidentiality of their identities and shall remove or not collect any information which can be used to link the participants.
3. The Department of Health expects you to provide a progress on your study every 3 months (from date you received this letter) in writing.
4. At the end of your study, you will be expected to send a full written report with your findings and implementable recommendations to the Epidemiological Research & Surveillance Management. You may be invited to the department to come and present your research findings with your implementable recommendations.
5. Your results on the Eastern Cape will not be presented anywhere unless you have shared them with the Department of Health as indicated above.

Your compliance in this regard will be highly appreciated.

DEPUTY DIRECTOR: EPIDEMIOLOGICAL RESEARCH & SURVEILLANCE MANAGEMENT
1 Methuen Rd
Selborne
East London
5210
27th September 2010

The Manager
Vision Care Optometrists
6 Craister Street
Mthatha
5100

Dear Madam

RE: REQUEST TO CONDUCT A RESEARCH STUDY

I hereby request permission from your business to allow me to conduct a research study on "the prevalence of refractive errors and patients requiring refractive services at 15 eye clinics in the Joe Gqabi, OR Tambo, Amathole and Chris Hani districts of the Eastern Cape". The study will be conducted at the relevant eye clinics. The study is towards Meur Degree under the Department of Nursing Sciences in the University of Fort Hare.

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ii. To describe the refractive services that are available to patients attending health facilities where the eye clinics are conducted

iii. To explore the possibility of nurses providing refractive services independently or under the supervision of an optometrist including an analysis of the pros and cons of this in light of the primary data that is gathered in the study

The information will be the property of Fort Hare University.
The summary of the research findings will be distributed to your business.

I hope my request will be highly considered

Regards,

F. Webber
27th September 2010

1 Methuen Rd
Selborne
East London
5201

Dear Fiona Webber

RE: REQUEST TO CONDUCT A RESEARCH STUDY

I hereby grant permission for you to conduct a research study on 'A study of the prevalence of refractive errors and patients requiring refractive services at 15 eye clinics in the Ukhahlamba, OR Tambo, Amathole and Chris Hani Districts of the Eastern Cape.

The purpose of your study being the following:

I. To identify patients with refractive errors and those requiring refractive services at 16 eye clinics in the Ukhahlamba, OR Tambo, Amathole and Chris Hani Districts of the Eastern Cape

II. To describe the eye services that are available to patients attending the government health facilities where the eye clinics are conducted

III. Particular emphasis will be placed on the possibility of nurses provided refraction services and under the supervision of optometrists, including an analysis of the pros and cons of this in the light of the primary data that is gathered in the study

Manager of Vision Care

[Signature]

[Name]

Chairman: Dr C.C.P McConnachie; Manageress: Mrs F. Webber
1 Methuen Rd
Selborne
East London
5210
27th September 2010

The District Manager:
OR Tambo Health District
9th Floor Sigeau Building
Mthatha
5095

Dear Sir

RE: REQUEST TO CONDUCT A RESEARCH STUDY

I hereby request permission from your business to allow me to conduct a research study on 'the prevalence of refractive errors and patients requiring refractive services at 15 eye clinics in the Joe Gqabi, OR Tambo, Amathole and Chris Hani districts of the Eastern Cape'. The study will be conducted at the relevant eye clinics. The study is towards Mcur Degree under the Department of Nursing Sciences in the University of Fort Hare.

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iii. To explore the possibility of nurses providing refractive services independently or under the supervision of an optometrist including an analysis of the pros and cons of this in light of the primary data that is gathered in the study

The information will be the property of Fort Hare University.
The summary of the research findings will be distributed to your business.

I hope my request will be highly considered

Regards,

F. Webber
MS FIONA WEBBER
EAST LONDON
SUBJECT: ACCEPTANCE TO CONDUCT THE RESEARCH STUDY IN OR TAMBO HEALTH
INSTITUTIONS IN NYANDENI AND MHLONTLO SUB-DISTRICT

This is to confirm the acceptance of your research to be conducted in both Nyandeni and
Mhlonliso Sub-Districts. The district has received the letter from the Department accepting your
research study to be conducted in those identified health institutions. Kindly identify yourself in
those institutions with this letter.

The District wishes you best success in your research project.

Best regards

DM BEZANA
DISTRICT MANAGER OR TAMBO HEALTH DISTRICT

United in achieving quality healthcare for all

24 hour call centre: 0800 0323 64
Website: www.ecdoh.gov.za
The Manager  
Amathole Health District  
19 St James Road  
Soafernwood  
Medical Centre Building  
East London  
5200

Dear Sir

RE: REQUEST TO CONDUCT A RESEARCH STUDY

I hereby request permission from your business to allow me to conduct a research study on "The prevalence of refractive errors and patients requiring refractive services at 15 eye clinics in the Joe Gqabi, OR Tambo, Amathole and Chris Hani districts of the Eastern Cape". The study will be conducted at the relevant eye clinics. The study is towards MSc degree under the Department of Nursing Sciences in the University of Fort Hare.

The objectives are the following:

i. To identify patients with refractive errors and those requiring refractive services at 15 eye clinic conducted at District Hospitals and Community Health Centres

ii. To describe the refractive services that are available to patients attending health facilities where the eye clinics are conducted

iii. To explore the possibility of nurses providing refractive services independently or under the supervision of an optometrist including an analysis of the pros and cons of this in light of the primary data that is gathered in the study

The information will be the property of Fort Hare University. The summary of the research findings will be distributed to your business.

I hope my request will be highly considered

Regards,

F. Webber
06 May 2011

Ms Fiona Webber
East London

Subject: Acceptance to conduct the research study in Amathole Health Institutions in Mqoma Sub District, Mbashe Sub District and Mdawaleni Hospital

This letter is to confirm the acceptance of your research to be conducted at Mqoma Sub District, Mbashe Sub District and Mdawaleni Hospital. The district has received the letter from the Department accepting your research study to be conducted in those identified health institutions. Kindly identify yourself in those institutions with this letter.

The District wishes you best success in your research project.

Yours in service delivery

[Signature]
Dr B.S. Noruka
DISTRICT MANAGER

19/05/2011
The letter of permission from the Amathole Health District to the researcher was lost therefore it was necessary for the researcher to ask the Amathole Health District for a copy of their letter of permission. They were unable to find a copy of their original letter of permission and therefore wrote a new letter. That is why the letter of permission from Amathole District Health is dated 19/05/2011.
Informed Consent

My name is Fiona Webber and I am doing my Masters in Community Nursing at the University of Fort Hare. My research topic is:

A study of the prevalence of refractive errors and patients requiring refractive services at 15 eye clinics in the Joe Gqabi, OR Tambo, Amathole and Chris Hani Districts of the Eastern Cape. The study is in the form of data taken from Vision Care’s patient records and semi-structured interviews with nurses that are working in the health facilities where the Vision Care eye clinics are conducted. The interview will last a maximum of 20 minutes. Although the study will not benefit you directly the information obtained may help patients with refractive errors.

I will keep a record of who has participated in the study but your data will not be linked with your name. All the data will be stored in a secure place and no one except myself, the researcher, will have access to your interview.

If you have any questions about the study or about participating in the study please feel free to ask me (Fiona Webber). You may call me on 0825579880.

Your participation in this study is totally voluntary and you are under no obligation to participate. You have a right to withdraw at any time if you care to, without repercussion or penalty, even in the middle of the interview.

The study and its procedures have been approved by the appropriate people and the research committee of the University of Fort Hare.

I have discussed the above points with the research participants and it is my opinion that the subject understands the benefits and obligations involved in participating in this project.

__________________________    __________________________
Researcher                        Date

I understand that my participation is voluntary and that I may refuse to participate or withdraw my consent at any time without penalty.

__________________________    __________________________    ______
Signature of witness          Signature of participant    Date
Semi-structured interview – interview schedule

1. What is the name of the health facility where you are employed?

2. What is your designation at the Health facility?

3. What are your nursing qualifications?

4. How many years of service have you performed?

5. Does your health facility employ any of the following eye specialists?
   A - ophthalmologist
   B - optometrist
   C - ophthalmic nurse

5a. If your facility employs an optometrist does he/she perform eye examinations?
   Yes / No

5b. If yes, does your optometrist provide:
   A - clinic readers
   B - prescription spectacles

6. Do any NGOs visit your facility and provide eye services?
   A - Yes - Name
   B - No

6a. If yes, what eye services do they provide?
7. If a patient requires prescription spectacles, what distance would the patient need to travel to obtain them?

_________ km

8. Do you refer all patients visiting your health facility with eye conditions to an NGO service?
   A - Yes
   B - No
   C - Sometimes

9. Is the NGO able to assist most of your patients with eye conditions?
   A – Yes
   B – No
   C – Sometimes

10. Nurses can be trained to perform eye refractions and dispense spectacles –

    Do you:

    Strongly agree/agree/ not sure/disagree/or strongly disagree with this statement

    Reason:

    ____________________________________________________________

    11. Would this have a positive impact on eye care?

    Yes/No

    Reason: ____________________________________________________

    ____________________________________________________________