UNIVERSITY OF KWAZULU-NATAL

INYUVESI YAKWAZULU-NATALI

BARRIERS TO EYE HEALTH CARE AMONG SCHOOL GOING CHILDREN IN SWAZILAND: TOWARDS THE DEVELOPMENT OF A FRAMEWORK FOR ACCESS TO CHILD EYE HEALTH CARE

Name:	**Velibanti Nhlanhla Sukati**
Student number:	**205500993**
Degree:	**Doctor of Philosophy**
Supervisor:	**Dr VR Moodley**
Co-Supervisor:	**Dr KP Mashige**
College:	**Health Sciences**
Discipline:	**Optometry**

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ABSTRACT

Background: Good vision and eye health plays an important role in the overall development and well-being of a child. Visual impairment in children has a significant impact on their social interaction, quality of life, and economic independence. Providing accessible and equitable eye health delivery for all children, particularly the disadvantaged, requires establishing a balance between their eye care demands and the services a country can afford to supply.

Purpose: The study aimed to investigate the barriers to child eye health services in the public health system in Swaziland in order to recommend, through the development of an access framework, strategies to improve access and address their specific eye health needs.

Methods: A mixed methods study design was used in the study which entailed a document review of neighbouring country's eye health policies, quantitative surveys to establish parents, teachers and eye health professionals knowledge and practices about children eye health; clinical facility assessment questionnaire to determine the availability of eye care facilities and services for children and qualitative interviews with Health and Education officials to determine current levels and factors that impact on access for children. The analyses included descriptive analysis for the quantitative data, thematic analysis for qualitative data and content analysis for the documents. The qualitative (interviews) and quantitative data (questionnaires) were triangulated to develop the draft access framework, and the Delphi technique used for experts' input and comments for the draft access framework.

Results: South Africa has national eye health guidelines that advocate for better public eye health services guided by formulated objectives with set targets. Although strides towards providing eye health care in Mozambique are noticeable, the country still lacks concrete eye health guidelines.

Three major themes emerged from both the Health and Education interviews, these being; level of access, structural barriers and knowledge barriers to child eye care services. The absence of an eye care referral system, an outdated National Health Policy, the lack of or skewed distribution of human eye care resource and clinics, and inadequate knowledge about eye health care for children were the most important issues contributing to poor access and provision of ophthalmic services. Poor access to basic education excludes many children, particularly those from rural areas, from benefiting from school health programmes, despite these being characterized by poor service delivery. The clinical facility assessments indicated that only a few children presented to the public sector eye care facilities that are available in the country and that the majority lacked working equipment and essential drugs for patient management. In addition, low vision and contacts lens fitting services were lacking while only two out of the five clinics conducted outreach programmes at schools.

Many (60.1%) parents reported that they have never taken their children for an eye test and 31.7% felt that their children's vision was fine. The presence of a health facility in a community influenced early child eye examination (p=0.001). The majority (90.1%) of teachers indicated that they were able to detect signs and symptoms of eye diseases, although, this was insignificantly associated with those who indicated being well informed about eye health (p=0.089). Children wearing spectacles was significantly associated with teachers who indicated being well informed about eye health (p<0.001) and those who were more likely to advise parents to take their children for eye testing (p=0.003). Nine (60%) eye health practitioners felt that they were less informed about eye health problems among children and six (40%) reported being well informed. Eight (53.3%) respondents indicated that there were no school and community eye care outreach programmes and seven (46.7%) reported that their clinics offered outreach programmes.

This is the first access framework study for child eye care in Swaziland and provides an opportunity to be a benchmark for other developing countries facing similar challenges. The framework advocates for a holistic approach in order to eliminate the isolation of eye health services. It further adopts a consumer oriented approach, with a particular focus on the current and future eye health status of children. The framework will serve as a foundation for eye health

policy formulation and programmes aimed at redressing, promoting and preventing visual impairment or blindness.

Conclusion: A carefully planned public health system, supported by an effective eye health plan and public health agencies, is needed to promote access to eye health services by children in the public education system in Swaziland. There is also a need for parents to be informed about basic child eye health in order to seek appropriate care. Teachers need adequate training and understanding about child eye health, including visual disabilities, to remove barriers in the teaching system. Developing and implementing guidelines for promoting access to child eye health may be useful to improve eye health service delivery in the country. The Swaziland government need to adopt and translate the framework into practice according to its intent as the information contained will be useful to the Ministry of Health and Social Welfare, Ministry of Education and Training, eye health professionals and parents.

Key words: Children, accessibility, availability, utilization, public health and education, school health programme, teachers, parents, eye health professionals

DEDICATION

• In memory of my late mother, Busisiwe Dube who passed away in December 2010, for believing in me, and her support and encouragement that has spurred me till thus far.

• My elder brother, Thulasizwe Sukati for being like a father to me, support and encouragement when I was on the verge of giving up throughout my post graduate years.

• My younger siblings, Bongumenzi and Behlulile Sukati for their valuable support and encouragement.

D E C L A R A T I O N

I declare that **BARRIES TO EYE HEALTH CARE AMONG SCHOOL GOING CHILDREN IN SWAZILAND: TOWARDS THE DEVELOPMENT OF A FRAMEWORK FOR ACCESS TO CHILD EYE HEALTH CARE** is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.

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Velibanti Nhlanhla Sukati   **Date**

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ACPF	Africa Child Policy Forum
ACRWC	African Charter on the Rights and Welfare of the Child
AIDS	Acquired Immunodeficiency Syndrome
CBM	Christian Blind Mission
CEHTFs	Child Eye Health Tertiary Facilities
CPD	Continuing Practitioner Development
CRC	Convention on the Rights of the Child
DBE	Department of Basic Education
NDOH	National Department of Health
DSD	Department of Social Development
DWCPD	Department of Women, Children and People with Disabilities
EFA	Free Education for All
FPE	Free Primary Education
FRESH	Focussing Resource on Effective School Health
HIV	Human Immunodeficiency Virus
HOD	Head of Department
HRH	Humana Resource for Health
IAPB	International Agency for the Prevention Blindness
INDS	Integrated National Disability Strategy
IOM	Institute of Medicine
MoTE	Ministry of Education and Training
MOSHW	Ministry of Health and Social Welfare
NGO	Non-Governmental Organization
PEC	Primary Eye Care
PHC	Primary Health Care
RE	Refractive Error
ROP	Retinopathy of Prematurity
SCCS	Schools as Centres of Care and Support

SADC	Southern African Development Community
SGDs	Sustainable Development Goals
TB	Tuberculosis
TVAP	Teacher Vision Awareness Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations International Emergency Fund
VAD	Vitamin A Deficiency
WCO	World Council of Optometry
WHO	World Health Organization

CHAPTER 1: INTRODUCTION

1.1. Introduction

This chapter reviews the background and rationale for the study, indicates the aim and objectives, significance, and outline of the thesis structure.

1.2 Background

Many developing nations have achieved the goal of basic education and prioritised health to increase life expectancy, improve disease prevention, nutrition and child immunization (Central Statistical Office & Macro International, 2008). Good health is a precursor to education, and an ideal school environment ensures that conditions and interventions allow for the attainment of health (Nutbeam, 1998; Davies and Macdowall, 2006). The World Health Organization's (WHO) goal of Health for All is the driving force for all nations to ensure that they provide appropriate health services, including the school environment (Davies and Macdowall, 2006). Little has been done to promote eye health in the developing world and blindness remains a major health problem. In many developing countries, where eye care services are not provided, the ability of children with visual impairments to achieve a basic education is compromised.

Children are entitled to quality general and eye health care, as highlighted in the various international and African child rights instruments (Borrel et al, 2013). Eye health care is a component of general health care and cannot be defined in isolation, as there are systemic conditions that have ocular manifestations. Health care includes disease prevention and management, eye and vision care, vaccinations, exercise programs, and similar services (Frazier and Kleinstein, 2009). Children need good vision and visual skills, as well as healthy ocular structures, to develop and function optimally in their daily lives. However, child eye health is generally not given high priority, despite the consequences of poor vision and eye health having a significant negative impact on the child, family and society (Siddiqui, 2009; Borrel et al, 2013). This has prompted a move to integrate child eye health programs into existing general health services in Africa in general, and in Swaziland in particular (Siddiqui, 2009; Borrel et al, 2013).

Eye health services includes early intervention for potentially blinding conditions among children (Siddiqui, 2009). In 2004, the WHO reported a decline in school attendance due to sighted children needing to assist visually impaired adults to perform their daily activities, a situation exacerbated by limited or no access to eye care interventions at an early stage of the condition (WHO, 2004; Pons et al, 2012). The prevalence of blindness is estimated to be approximately 1% in Swaziland, with cataracts contributing a significant proportion (50%), followed by diabetic retinopathy and glaucoma (Pons et al, 2012). The national statistics revealed that in 2008, 16.8% of the population were disabled, of whom 63.1% had visual impairment, followed by 15% with hearing difficulties. The Harmonization of Children's Laws in Swaziland (2012) presented broad generalisations without specifying the burden of visual impairment and blindness amongst children. It is therefore possible that many visually impaired adults may have had an impairment since childhood, which may not have been identified due to limited or no access to eye care services and interventions. This suggests the need to identify possible barriers to accessing eye care services in the country, which is the focus of this study.

The WHO cites the principal barriers to having eye surgery as being financial constraints, access and a lack of understanding of cataracts and its management (WHO, 2004). A survey conducted by Pons et al (2012) among patients presenting to the eye clinic of the Good Shepherd Hospital in the Lubombo Region of Swaziland showed that preventable conditions, such as trachoma, river blindness, childhood blindness and refractive errors, were prevalent. Other causes of avoidable blindness amongst children were glaucoma, cataract, retinopathy of prematurity (ROP), corneal opacification/scarring, eye injuries, vitamin A deficiency (VAD) and neonatal infections (WHO, 2004; Pons et al, 2012). As in many developing countries, eye care services in Swaziland are mostly concentrated in urban areas, and provide curative rather than promotive and preventive services. Within this context, there is a paucity of information on issues such as access to eye health care among school children. Swaziland had a population of 1.1 million in 2006, with children accounting for almost half (44%), making a focus on their health, specifically eye care, essential, so that they can access education and become productive adults (Central Statistical Office & Macro International, 2008; Harmonization of Children's Laws in Swaziland, 2012).

Countries in Sub-Saharan Africa, including Swaziland, suffer from a brain drain of health workers for various reasons, such as the offer of better remuneration and working conditions in other countries (Oduntan et al, 2003; Borrel et al, 2013). This constant exodus of health workers results in many vacant health professional posts across the country. Eye care services in the public sector were only provided in early 2000, before which, people needed to access and pay for services in the private sector or at mission eye clinics. Since then, many posts have been filled by eye care professionals in the country's four regions (Swaziland Demographic Health Survey 2006-2007, 2008; National Health Sector Strategic Plan 2008-2013, 2009), with most being concentrated in urban areas within the Hhohho Region (3 optometrists, 1 ophthalmologist and 6 ophthalmic nurses). The Shiselweni Region has 1 optometrist and 1 ophthalmic nurse, the Manzini Region has 1 optometrist, and 1 ophthalmic nurse employed by a church mission, while the Lubombo region has 1 cataract surgeon and 5 ophthalmic nurses but no optometrists.

Most of the public and private eye care services are situated in urban areas and provide comprehensive eye care services, including periodic surgical eye camps. This is despite the fact that most of the population live in rural areas, where there are no outreach programmes, and their ability to access eye care services and possible barriers to services are unknown. A number of researchers have suggested that introducing eye care programmes in rural areas may help to improve access to these essential services (Ali et al, 2007; Borrel et al, 2013). However, to ensure that they are accessible and affordable, an understanding of the barriers that have affected their implementation to date needs to be investigated.

Barriers are broadly defined as factors that prevent people from accessing services, such as healthcare (Frazier and Kleinstein, 2009; Maples, 2000), which can affect both service delivery provision and access. Children usually fail to realise their full potential when they have eye problems and do no tell someone about their visual limitations. Moreover, teachers, parents and guardians can find it difficult to identify children with vision problems, constituting a barrier to accessing relevant eye health care at an early age (Frazier and Kleinstein, 2009; Maples, 2000). Studies on awareness of eye conditions have been conducted in developed and developing countries, and have suggested that timely eye care is key to reducing the burden of blindness, including among children (Dandona et al, 2001). Muhit et al (2011) and Shrestha et al (2014)

reported poor health seeking behaviour among parents for their children emanating from poor health literacy. The authors concluded that, as a public health goal, advocacy for parents' education was necessary. Other reasons highlighted for the non-utilization of services were socio-economic related and personal factors, such as parents prioritizing other health related illnesses (Dandona et al, 2000; Siddiqui, 2009; Borrel et al, 2013; Frazier and Kleinstein, 2009). Abdullah et al (2012) stated that even where eye care services are available, other barriers, such as unaffordability and inaccessibility, prevent communities from accessing them. The authors suggested that in order to achieve the goals of Vision 2020, this being to reduce avoidable visual impairment and blindness, these barriers should be addressed (Frazier and Kleinstein, 2009; Abdullah et al, 2012).

In children, the visual system develops rapidly during the early years, and therefore, if conditions such as amblyopia are left untreated, the risk of bilateral visual impairment doubles in later life (Van Splunder et al, 2006; Van Leeuwen et al, 2007; Borrel et al, 2013). Children living with learning disabilities are also more likely to be visually impaired (Van Leeuwen et al, 2007), highlighting the need to identify childhood vision problems as early as possible. As the number of children increases through population growth, the incidence of visual problems is likely to rise, specifically among poor populations, who are more likely to be affected by low birth weight, which is a higher risk for visual disability (Van Splunder et al, 2006; Van Leeuwen et al, 2007; Salt and Sargent, 2014). Compared to other health disciplines, child eye health care in Swaziland has not been given the priority it requires to ensure that children can function both in and out of school, with no guidelines in the school health document.

The scarcity of eye health care services in Africa requires attention (Oduntan et al, 2003; Ashaye et al, 2006), inaccessibility and non-affordability having been reported to be barriers to accessing eye care services for rural residents in developing countries such as Nigeria and South Africa (Oduntan et al, 2003; Ashaye et al, 2006). In those countries where primary eye care programmes have been implemented, such as outreach programmes, more focus has been directed towards alleviating cataract surgery backlogs (Whitcher et al, 2001). Of the 12 Child Eye Health Tertiary Facilities (CEHTFs) in the 47 sub-Saharan countries, only Kenya, Nigeria, South Africa, Tanzania and Uganda have tertiary education facilities for child eye health that are aimed at meeting their

eye health care needs (Cook, 2011; Agarwal et al, 2010). These countries have set up such services to respond to the need of the population and have therefore implemented local training opportunities to support their health policies. The Prasad Eye Institute pyramidal eye care service model in India incorporates child eye health prevention programmes, treatment, low vision and rehabilitation (Rao, 2015). The model introduced a vigorous surveillance on all emerging childhood diseases and active training among all providers of eye care to children (Rao, 2015).

In 2005, the Southern African Development Community (SADC), of which Swaziland is a member, adopted a resolution to support each other to address issues pertaining to health and education (Ministry of Education and Training (MoTE), 2011). The resolution further suggested that different health professionals needed to be brought in to educate and encourage teachers to provide a conducive learning environment for the children's wellbeing (MoTE, 2011). As children spend much of their time in the school environment, teachers can be utilized as a useful resource in a class room setting in terms of observing learners with potential visual and eye problems, and can give parents advice about taking their children for visual examination. Countries such as India and Tanzania have shown that teachers can play an important role in eye health care, thus reducing the workload of eye care professionals in a health system that is already overburdened (Powell et al, 2009; Korani et al, 2015). In South Africa, Seethal and Karim (2000) found that the assessment conducted by teachers using the Teacher Vision Awareness Programme (TVAP) was useful to detect children with and without visual problems. The authors advocated for the programme to be incorporated in teacher training programmes, and to be implemented as a primary vision care intervention and in health education programmes. This is necessary due to the assumption that in the absence of relevant health and eye care services and policies, the knowledge of the population about children eye health is likely to be poor.

Health policies are the cornerstones of health care delivery systems in any country and enshrine the rights of citizens (Ham, 1997; Wan, 1995; Glendinning, 2003). While most countries have health policies, barriers continue to exist to accessing health care in developing countries, such as Swaziland (World Bank, 2006; Borrel et al, 2013). In what is considered to be one of the world's poorest countries, high unemployment rates and the lack of government support in the form of subsidies for those living in poverty impact on their ability to access health care services, even at

public health facilities, as many are too poor to pay the cost of consultations and treatments (World Bank, 2006; Coovadia et al, 2009). For those who can afford to pay for private care, services are available, mainly in the larger urban areas (World Bank, 2006). However, most of Swaziland's 1.1 million citizens (as reported in the 2006 census) rely on the public sector for health care services, including eye health care. Those wanting to enter the eye care profession receive training outside the country as it is not offered at local tertiary institutions.

Poor recognition of eye health staff needs and slow responses to service delivery complaints, have been reported as major concerns hampering quality health services delivery (WHO, 2004; National Health Policy, 2006). Pakenham-Walsh and Bukachi (2009) identified inadequate national guidelines for health services as the major reason for the insufficient knowledge and practice among health workers about basics of diagnosing and managing common diseases in health care. Gaps relating to awareness and knowledge about clinical or preventative health interventions were also noted by the authors. Greater knowledge gaps were identified among doctors working in tertiary hospitals than at district hospitals, while among nurses at different levels, no difference in knowledge gaps was reported by Pakenham-Walsh and Bukachi (2009). This highlights the need for eye and health policies to address the lack of eye health knowledge across the health workforce, which may be caused by and result in poor performing health care service delivery system.

Jones (2000) described good practices as neither absolute nor fixed, referring to the fact that what is considered to be progress in one country may be perceived as backward in another. Ethiopia has shown considerable progress by availing resources to schools following the exclusion of disabled children from the formal education system, while Swaziland and Zimbabwe are far behind in improving the conditions for visually impaired children (Jones, 2000). In 2009, the United Nations International Children's Emergency Fund (UNICEF) classified Swaziland as one of the 10 least child friendly countries in Africa. The country is reported to be lagging behind with developing policy and legal frameworks that will provide a national response to children's issues. The report further indicated that children have limited avenues to express themselves, highlighting the need to strengthen children's rights for meaningful participation (UNICEF, 2009)

Widespread poverty and infectious diseases contribute to the barriers to achieving optimal health and development of children in Swaziland. The Human Immunodeficiency Virus (HIV) and Tuberculosis (TB) epidemics, the growth of non-communicable diseases, and disabilities from injuries have worsened the situation by placing challenges on the optimal allocation of health care resources (Coovadia et al, 2009). As children constitute a large percentage of Swaziland's future workforce, ensuring their visual well-being through access to eye health services is an important developmental goal.

Approximately 70% of the children enrol in the public education system in Swaziland, with the school health programme being established by the Ministry of Health and Social Welfare (MOSHW) to assist children who attend public schools (MoTE, 2012). The UNICEF in 2006 revealed that approximately 30% of children in Swaziland are either vulnerable or orphaned or both (UNICEF Humanitarian action report, 2008). Of concern is that the country continues to experience high drop-out and repetition rates with 44% of the children spending more than 10 years to complete their basic education (UNICEF Humanitarian action report, 2008). A staggering number of children remain not enrolled in primary (74%) and secondary (88%) education (MoTE, 2012; Harmonisation of Children's Laws in Swaziland, 2012). A 2006 report from the World Bank indicated that although the country's inhabitants have access to subsidized health care, many still need to pay for access to these services. Following a decline of the global donor base to health care in the country, an increase from 34.9% to 41.7% of total private household expenditure in health has been observed (African Health Workforce Observatory, 2009). It is within this context that the issues of accessibility need to be explored, as the socio-economic circumstances of the country not only affect children's access to health services, but also their ability to attend school. However, this study cannot address those children who fall out of the school system, and focuses on developing a programme for those who are able to attend school.

1.3 Rationale for Study

Literature suggests that many eye conditions are still prevalent among children while many remain without access to eye health care (WHO, 2004; Courtright et al, 2011; Borrel et al, 2013). The authors concluded that this was due to the unavailability of eye health care facilities, insufficient equipment and lack of eye health care human resources (WHO, 2004; Courtright et al, 2011; Borrel

et al, 2013). Swaziland lacks adequate child eye care services due to various factors, such as a lack of policies to guide eye care, limited health care budgets, staff shortages, inadequate eye care facilities and lack of equipment. As a result, there is no coordinated response from relevant stakeholders to adequately address these issues, nor are there guidelines for the direction child eye care services should take. These challenges pose significant barriers to achieving the goals of Vision 2020 of eliminating avoidable blindness. There is therefore no understanding of the barriers that children experience in accessing eye health services in the Swaziland public health system, this information being essential to develop an appropriate access framework that will address their specific needs.

1.4 Aim and Objectives

The study aimed to investigate the barriers encountered by children within the Swaziland public health system in order to improve access to eye health services by developing an appropriate access framework that will address their specific needs.

The specific objectives of the study were to:

1. Undertake a review of eye care policies in two neighbouring countries regarding child eye care programmes
2. Determine current levels and factors that impact on access to eye care services for children from the perspective of health and education officials
3. Determine the availability of eye care facilities and services for children in Swaziland
4. Determine teachers', parents and eye care professionals' knowledge and practices about child eye health care
5. Develop and validate a child eye health framework for Swaziland

1.5 Significance of the study

The concept of school health embraces the vision of health in a holistic way, where negatives and positives influencing health in general are often identified. It also incorporates prevention, and focuses on priorities and outcomes of the school health programmes (United Nations Educational, Scientific and Cultural Organization (UNESCO), 1998). Beyond health promotion, children,

parents, school staff and communities come together with the aim of achieving the same goals, which allows the efficient use of evidence based interventions for children through monitoring and evaluation (Nutbeam, 1998; Davies and Macdowall, 2006). School health related interventions are particularly beneficial for the least healthy children, many of whom are malnourished. The findings of this study will be used to inform the planning and provision of child eye health at all levels in Swaziland, identify areas that lack eye services, and devise strategies to recruit eye professionals and provide high quality and efficient ophthalmic services in the public sector. Although the study is mainly concerned with visual problems that children encounter while at school, it also raises awareness of other eye health related issues that exist in the school environment and non-discriminatory policies that exclude those that are disabled from accessing their basic right.

This information will be useful to the following bodies as it will indicate the gaps in eye health access by children in the public education system in Swaziland:

1. Government of Swaziland
2. The Ministry of Health and Social Welfare in Swaziland
3. The Ministry of Education and Training in Swaziland
4. Eye Health Professionals in Swaziland (public, private, Non-Governmental Organizations (NGOs) etc)
5. Parents of children in the public education in Swaziland

1.6 Thesis Structure

The document is presented in the following seven chapters:

Chapter 2. Theoretical framework: provides a theoretical framework of the study on the challenges concerned with access to eye and general health with particular focus on social justice philosophy and understanding primary eye health care.

Chapter 3. Literature Review: reviews the efforts to address school health issues globally by international organizations such as UNICEF on issues, such as childhood blindness, challenges faced by children living with visual impairment and blindness, causes of visual impairment and blindness, factors influencing visual impairment and blindness in children, as well as barriers to eye health care.

Chapter 4. Methodology: outlines the methods used to achieve the study objectives, and includes the study population and sample, the tools, pilot study and processes, as well as the ethical considerations.

Chapter 5. Results. Presents the results of objectives 1 - 4.

Chapter 6. Discussion: provides a detailed discussion of the results of Objectives 1 – 4, and reviews them with respect to local and international studies.

Chapter 7. Child Eye Health Access Framework. Presents the child eye health access framework developed for Objective 5.

Chapter 8. Conclusion: restates the problem needing to be addressed, and address the extent to which the aim was achieved by presenting a synthesis of the results of the study objectives. It outlines the limitations that may have affected the results, and offers recommendations for future research.

CHAPTER 2: THEORETICAL FRAMEWORK

2.1 Introduction

The challenges of access to general and eye health care require participation by all relevant stakeholders in order to adequately address them. To this end, it is important to review all elements that impact on access and revisit frameworks emanating from international, regional and national organizations, legislative laws and policies in health and education to assess their relevance. This chapter presents a theoretical framework that focuses on core issues regarding access to eye health care, including social justice and primary eye care (PEC).

2.2 Access to health care

Although the concept of universal coverage to health care was embraced by the WHO member countries in 2005, few low-income countries are yet to achieve this goal (Jacobs et al, 2011). The concept of access has remained ill-defined, with a few attempts made to give clear meaning for policy designers to monitor the effectiveness of the plethora of programmes that have been launched to meet that goal. Aday and Andersen (1974) claim that it is being viewed as a political idea as opposed to an operational one. Ricketts and Goldsmith (2005) agree that access as a concept remains nebulous and obscure to many policy designers and health practitioners, as well as to the broader society. MacKinney et al (2014) referred to access as a synthesis of perspectives that needs to be practical to evaluate policy development, outcome measurement, equity assessment, change tracking and upholding accountability from stake holders. In addition, access can be viewed as a dynamic, complex and interrelated process that aims to achieve certain desirable health outcomes as opposed to the introduction of new policies that may result in unintended consequences.

Balabanova et al (2007) indicated that although the expansion of a health system can be viewed as a critical element for improved services, it may fail to achieve the desired outcomes. This is due to existing systemic barriers to access, as services may not be appropriate and responsive to individual's needs, this being combined with ineffective care provision. The authors concluded that expanding infrastructure and having sufficient human resources does not guarantee access to

healthcare, as these interventions have led to those in need of care being requested to pay more out of their pockets. However, in low income countries, these initiatives have been accepted as key policy objectives, the impact of which unfortunately prove difficult to quantify on good quality care (Balabanova et al, 2007).

Derose et al (2011) and MacKinney et al (2014) highlighted the importance of evaluating the population characteristics for those at risk of inappropriate or inadequate health care, which include age, gender, culture, family size and occupation. Crucial characteristics pertaining to diverse rural populations (such as culture and personal beliefs) have also been reiterated. Therefore, culture and ethnic variances between practitioners and patients' emanating from different personal or population characteristics can constitute barriers to access. According to the literature, the characteristics of the population (such as medical aid and family income) and the delivery of health systems (such as organization and distribution), were the two main themes used to equate access (Aday and Andersen, 1974; Derose et al, 2011). However, others preferred evaluating outcome indicators of the population through the health system, such as measuring utilization and satisfaction of individual scores (Balabanova et al, 2007; MacKinney et al, 2014). Balabanova et al (2007) argued that access was a combination of several complex factors, such as user characteristics, availability of services and outcomes, while bearing in mind the relationship that exists between these elements. Alternatively, communities have been viewed as intermediaries to accessing care, as some decisions to seek care are often as a result of negotiating with multiple members rather than weighing options individually. The community will neither facilitate nor obstruct access, as this may be dependent on influential factors, such as individual's power and social cohesiveness (Balabanova et al, 2007).

2.3 Social justice philosophy

In the health context, social justice refers to equality in society irrespective of social hierarchy, geographical location, class, race and/or gender (Lee and Cubbin, 2009; Pauly et al, 2013). It is also known as the foundation of public health moral justification for people to realize their health capabilities (Lee and Cubbin, 2009; Pauly et al, 2013). Hence, public health cannot be separated from social justice, as it is central to its mission (Rosales et al, 2012). Promoting health equity is not the sole mandate of public health, but it plays a critical role in reducing health inequalities

(Pauly et al, 2013). No society can be assured of good health unless all individuals support each other and show willingness to create suitable conditions, and there are effective institutions and practices (Powers and Faden, 2006). The distribution of medical services relies on dimensions of well-being other than health that ensure that it is not only determined by availability and accessibility, but what social justice states as a necessity of moral equal (Powers and Faden, 2006).

Health systems worldwide have social, economic and ethical goals to reduce health inequalities between and within countries. The consequences of these inequalities tend to shape the way in which some living in the same society are disadvantaged, while the disparities are potentially remediable (Pauly et al, 2013). The misconception that usually exists in society is to define health differentials by social position of individuals, their economic status, level of education (to avoid health risks behaviour), and access to information to protect themselves. In well-designed health systems where, public health interventions are implemented, the social gradient remains, as those who belong to lower socioeconomic groups benefits less from the interventions compared to those who are well-off (Pauly et al, 2013).

A global perspective advocating for health and human rights has been comprehensively explored, while social epidemiology and social medicine have lagged behind. The WHO Commission on Social Determinates of Health in 2005 focused on three driving forces: respect of evidence, social justice belief and the frustration in the lack of action in addressing health inequalities and social determinants of ill health (Venkatapuram et al, 2010). In developing countries, including on the African continent, the rise of communicable, life style and infectious diseases has compounded already inadequate services, and the focus on curative services has increased at the expense of promotive and preventive services. Social circumstances in which people are born, live and work have a considerable impact on their overall well-being. This is evident in societies where national health insurance has been approved and implemented, with many individuals remaining without access to health care services (Culyer and Wagstaff, 1993; Pauly et al, 2013).

While many constitutions have clauses that indicate that all citizens, including children, have a right to accessing health, these have not been translated into practice in many countries (Lee and Cubbin, 2009). The absence of inequality is rooted in the principle of fairness, indicating that in

a fair society, access to health is not a privilege but a right (Lee and Cubbin, 2009; Pauly et al, 2013; Fafard, 2012). In societal norms, it can generally be assumed that those living in affluent places command more health resources, with significant differences in life expectancy and health compared to those in socially-disadvantaged communities. In addition, previous history plays a role in this inequality equation (Culyer and Wagstaff, 1993; Lee and Cubbin, 2009; Pauly et al, 2013). Pauly et al (2013) suggested that politics, social structures and institutional context shape social goods distribution. Therefore, dismantling privilege systems in public policies found in social structures, and recognizing differentials among people, can help alleviate these disparities in health. Rosales et al (2012) argued that public health practitioners have focused more on emergency responses, due to the occurrence of current events, while ignoring the public health education and social justice as a core value. The principles of health justice advocates for the distribution of responsibilities to capable role players by voluntary commitments and functional role based requirements.

Therefore, providing an analytical framework aimed at identifying vulnerable individuals, particularly children living in societies with poorly conceived public health policies, appears paramount. Furthermore, curbing threats, such as complacency from those who have the means to make a difference, unjustifiable reasoning and abusive role players requires coordination and coherent reasoning across all fields responsible for advancing health and health equity (Venkatapuram et al, 2010). Ethical commitment also plays a vital role through motivating individuals who are willing to distribute resources rather than remaining autonomous when discharging duties (Venkatapuram et al, 2010).

2.4 Understanding primary eye care service delivery

The primary health care concept is based on scientifically practical and socially acceptable methods of accessible health for all individuals in the community, regardless of their socioeconomic status. The WHO has included the prevention of blindness into the primary health care system, this consisting of community and social development to promote healthy behaviour, strengthen community cooperation through the recognition of blinding diseases, and provide eye care service delivery to those with potentially blinding diseases (WHO, 1997). Furthermore, the prevention of blindness and eye service delivery was incorporated at all levels of health care, with

appropriate programmes depending on the resource availability of a country or region. All the programmes introduced are to be evaluated to identify potential weaknesses and strengths (WHO, 1997). The link between Primary Health Care (PHC) and PEC is characterized by eight essential elements that form an integral part of the former, as indicated in Table 2.1.

Table 2.1: Primary eye care is related to the elements of primary health care

PHC Element	Relation to PEC
Clean water	Prevent trachoma and vitamin A deficiency; prevent diarrhea, which may reduce cataract prevalence
Basic sanitation	Prevent vitamin A deficiency and trachoma
Maternal/childcare; trachoma family planning	Prevent vitamin A deficiency, ophthalmia neonatarum and measles
Immunization	Prevent childhood blindness from measles and congenital rubella
Control locally endemic diseases	Eradicate Trachoma
Health and nutrition education	Vitamin A deficiency, trachoma, trauma
Treat common diseases	Refractive errors, trauma, corneal ulcers, referral and follow up for chronic conditions such as cataracts, glaucoma and diabetes.
Provide essential drugs	Tetracycline eye ointment and vitamin A capsules

Source: Mozambique Eye Health Advocacy Group, 2014

Primary eye health comprises of a set of preventive, promotive and curative services that are carried out by available qualified personnel and focus on a range of health areas, including education, screening, counseling treatment, diagnosis and disease prevention (Murthy and Raman, 2009). Primary eye care is therefore not only targeted at preventing visual impairment and blindness, but attempts to address issues of availability of services for comprehensive eye health care (Murthy and Raman, 2009). Primary eye care is the first contact for all eye conditions conducted by optometrist/ophthalmic nurses who provide comprehensive vision and eye care involving detection, diagnosis, refraction, dispensing and rehabilitation, when necessary (Thomas et al, 2011). However, implementation and development rely on the availability of existing primary health care systems and the primary worker focuses mainly on educating communities to avoid blindness.

The adoption of the PHC or PEC model has been viewed as the frontline activity needed to identify many disorders at an early stage (Murthy and Raman, 2009). However, there is no consensus regarding the understanding of PEC, its content and implementation (Murthy and Raman, 2009). There are ongoing debates about who constitutes the PEC team and their respective scopes of practice, the debates being underpinned by the differences in eye care needs and available workforce (Murthy and Raman, 2009). For example, in developing countries, PEC falls within the scope of nurses, ophthalmic technicians and optometrists, whilst in many developed countries, it is within the scope of ophthalmologists (Murthy and Raman, 2009; Thomas et al, 2011). In the developing world, there is a lack of eye health practitioners due to various factors, such as a lack of training institutions, population growth, health inequalities and financial constraints (Murthy and Raman, 2009; Thomas et al, 2011).

According to the World Council of Optometry (WCO), the scope of practice for optometrists differs across the world, as some are afforded the opportunity to treat ocular diseases (Thomas et al, 2011). In addition, the scope of tests performed at primary level differs depending on the level of development of the health services. For instance, in some countries, medical officers or highly skilled eye workforce become part of the PEC team, resulting in tests being performed that are generally considered secondary care. With regards to eye health education, the need for specialized or highly qualified workforce is deemed not necessary, as PEC workers have to address unfounded beliefs regarding modern surgery in communities and the importance of vision (Thomas et al, 2011).

Table 2.2: Eye conditions integrated into PHC

Conditions to be treated by trained primary health worker	Conditions to be recognized and referred after treatment	Conditions to be recognized and referred for treatment
1. Conjunctivitis and lid infections - Acute conjunctivitis - Opthalmia neaonatarum - Trachoma - Lid lesions (stye and chalazion) - Allergic and irritative conjunctivitis	- Corneal ulcers - Lacerating or perforating injuries of the eyeball - Lid lacerations - Entropion/trichiasis - Burns: chemical, thermal	- Painful red eye with visual loss - Cataract - Pterygium - Visual loss; <6/18 in either eye
2. Trauma - Subconjuctival heamorrhage - Blunt trauma - Superficial foreign body		
3. Blinding malnutrition		

Source: WHO Guidelines for Primary Eye Care, Konyama, 1998

In order to prioritise eye conditions identified at national level, there is a need to bring in teachers, non-communicable disease workers, maternal and child health team into PHC and PEC. In addressing child eye care challenges, teachers can be trained to screen for refractive errors and be able to differentiate between serious eye conditions from trivial ones.

2.5 Conclusion

The state has the responsibility to provide adequate, affordable and quality health services to its citizens. These services should include preventive and promotive programmes to keep various infectious and non-communicable diseases at bay. There is also a need for quality assurance and management programmes, as well as monitoring and evaluation systems to ensure quality eye health service provision at all times.

CHAPTER 3: LITERATURE REVIEW

3.1 Introduction

Children living in societies with poorly conceived public health and education policies are bound to endure the negative consequences thereof. The priority goal is to alleviate childhood blindness, particularly in countries like Swaziland, where many people live in poverty, a contributor to poor health outcomes. This chapter presents a review of literature that focuses on efforts to address school health issues globally by international organizations such as UNICEF on key issues on childhood blindness and visual impairment, such as causes, challenges experienced and barriers to accessing eye care services by children.

3.2 Efforts to address school health globally

The section seeks to review health issues at all levels, local, nationally, regional and globally through schools. In 1995, the WHO Expert Committee reviewed barriers to the successful initiation of school health programmes, and cited the absence of programme infrastructure, lack of responsibility and accountability, inadequate vision and strategic planning, insufficient understanding and adoption of programmes, and inadequate collaboration and coordination among persons responsible for addressing health in schools as challenges. Regardless of the identified barriers, evidence based research from developing and developed countries indicates that school health programmes can simultaneously improve education system, and advance public health, social and economic development for all nations (Nutbeam, 1998; Davies and Macdowall, 2006).

The Focusing Resources on Effective School Health (FRESH) Monitoring and Evaluation Framework (2010), which includes the WHO, UNESCO, UNICEF, World Bank and International Education, revealed that health relates to education in three ways: an outcome of quality education, an input and condition required when leaning, and as a collaborative sector with education. An effective education system is one that ensures that children are able to learn and be healthy at the same time, allowing the provision of education for all children even in poverty stricken areas (FRESH Monitoring and Evaluation Framework, 2010; Nutbeam, 1998; Davies and Macdowall, 2006). School health related interventions have more benefits among the least healthy children who in many instances are malnourished. Four pillars were adopted by the FRESH Monitoring

and Evaluation Framework (2010) to ensure all schools meet the health needs of school aged children. These include formulating non-discriminatory heath policies, accessing basic human needs in the school environment, providing skilled based health education and cost-effective services in schools. The Swaziland Education Ministry, in collaboration with Health Ministry, have released a school health document in line with these global efforts to promote school health. However, implementation has been slow, with challenges of shortage of health workforce as well as the lack of referral system, which has resulted in many school children not accessing ophthalmic services.

3.2.1 UNICEF efforts to promote school health

The paucity of reports on school health promotion efforts has resulted in there being very little information on barriers to spectacle wear, the cost of the programme compared to its benefits, as well as on quality indicator tools for common conditions (Wedner et al, 2008). For a sustainable and long-lasting future, UNICEF has always advocated for a healthy and safe environment for children. In developing countries, particularly in poor resourced settings, the quality of education for children is undermined by conditions and behaviours that are affected by their social and physical well-being (Nutbeam, 1998; Davies and Macdowall, 2006). The promotion of school health was identified as the most critical component to improve health, with schools not only concentrating on academic learning only but also serving as the provider of essential health education and services (Kolbe, 2002; Nutbeam, 1998; Davies and Macdowall, 2006).

Health promotion can contribute significantly to economic sustainability due to the fact that prevention is much cheaper than medical expenses incurred during curative treatment. However, without established policies on education and services focusing on prevention of diseases, it will be difficult to view the importance of health as a sustainable future (Kolbe, 2002; Nutbeam, 1998; Davies and Macdowall, 2006). In 2002, Kolbe reiterated that unhealthy children are less likely to practice healthy behaviours when they become adults due to having received less education, consequently leading to unhealthy behaviour for their children as well. The widespread new and re-emerging communicable and non-communicable diseases have also posed additional challenges to the success of the school health programme (Kolbe, 2002, Nutbeam, 1998; Davies and

Macdowall, 2006). Therefore, a modern school health programme needs to integrate many resources of health education as well as social services agencies (Kolbe, 2002).

3.3 Childhood blindness

In the past decades, international programmes and research interventions have led to a substantial decrease in the number of children dying before the age of five years after becoming blind (Foster and Johnson, 1990; Thylefors et al, 1995). However, it has been noted that research progress in childhood blindness in low-income countries is still lagging behind that of developed countries. Reliable estimates on disability adjusted years lost due to childhood blindness, secondary to VAD, are inadequate in poor countries (Courtright et al, 2011). Many children suffer from some form of disability, with most being found in the poorest countries of the world. Moreover, many suffer from multiple disabilities, leading to marginalized lives (Maulik and Darmstadt, 2007). Visually impaired children may present with other disabilities, and are normally referred to as 'special groups', as the impact of vision loss being severe without other disabilities, particularly among hearing impaired children. Furthermore, the underlying causes may be common, and include prenatal infections, hereditary diseases etc. The difference in the prevalence and pattern of causes for children with isolated visual loss compared to other disabilities is relevant to policy amendments and individual case management aimed at early detection of vision defects (Rahi and Dezateux, 1999; Maulik and Darmstadt, 2007).

The prevalence of blindness in children is much lower than in adults, with the majority of population based data on childhood blindness being obtained from either surveys conducted to assess blindness for all ages, or from those conducted to assess a particular condition of interest in children, for example VAD or Refractive error (RE) (Dandona and Dandona, 2003). Recent surveys suggest that poorly resourced settings in sub-Saharan Africa do not provide data on blindness prevalence, but show changing patterns in the causes of blindness and visual impairment, with more congenital conditions and inadequate cataract coverage (Courtright et al, 2011). Moreover, the surveys indicate a few corneal conditions due to VAD and measles.

3.3.1 Childhood blindness in Africa

The majority of blindness that occurs in Africa is curable, with efforts being made to produce cost-effective treatment for visual impairment and blindness (Apple et al, 2000; Shah et al, 2011). However, the continent is faced with serious challenges as the demand for eye care in children outweighs the available resources (Gilbert et al, 2008; Jadoon et al, 2007; Sacharowitz, 2005). Eye care providers, governments, public health professionals, NGOs and donors have tried to focus their efforts on reducing vision loss among children, especially in poorly resourced settings, by funding programmes aimed at correcting and improving cataract surgical facilities. Furthermore, many population surveys have highlighted the lack of awareness about the correctable causes of visual impairment and blindness due to the non-availability of affordable services and provision of spectacles (Gilbert et al, 2008; Jadoon et al, 2007; Sacharowitz, 2005). The lack of ophthalmological manpower is one of the major obstacles facing eye care services, particularly in developing countries (Gilbert et al, 2008; Jadoon et al, 2007). In Africa, there is less than one ophthalmologist for every million people, with the ophthalmologist: population ratio varying, with most practitioners being found in cities (Lewallen and Courtright, 2001). Additionally, the inadequacy of trained surgeons and nurses has resulted in less than 10% of those requiring surgery receiving it, a situation much worse in rural areas. Generally, patients who need ophthalmologists for treatment are instead attended to by health workers who are only trained in the primary treatment of eye diseases.

High costs are incurred by countries due to childhood blindness in terms of lost productivity, most being attributable to children living in high income countries, despite the low prevalence of childhood blindness, due to their greater earning capacity and life expectancy compared to low income countries (Rahi and Dezateux, 1999). The direct costs of educating visually disabled children and providing rehabilitation services, as well as loss of productivity, impacts on families and communities, particularly in developing countries (Rahi and Dezateux, 1999; Sacharowitz, 2005). Providing appropriate access to eye care to prevent and cure blindness and visual impairment can result in considerable savings at all levels of society, and thereby support the local and regional development (Rahi and Dezateux, 1999; Sacharowitz, 2005).

The key principle of managing ophthalmic diseases among children is the plasticity of the visual system and in early life, visual function can be profoundly impaired by a variety of causes, such as stimulus deprivation (Rahi and Dezateux, 1999). Some of the adverse changes cannot be identified during the critical early development period, and become largely irreversible due to the lack of trained personnel to attend to these children (Rahi and Dezateux, 1999). To ensure that children receive appropriate eye health services, efforts need to be made to attract general ophthalmologists into the paediatric field (Adio and Komolafe, 2013).

3.3.2 Education and training

Education remains a key catalyst in advancing development of nations, a key priority being the ratification of the African Charter on Children's Rights and Welfare (UNESCO, 1998; Jones, 2000). Advocating for health promotion will help to reduce the differences in health status, and ensure that children achieve their full potential with equal opportunities and resources at their exposal. Therefore, having knowledge of the causes and magnitude of childhood visual impairment is important for the purposes of planning and providing health and evaluating educational services for affected children.

In the Kingdom of Swaziland, government services often neglect children living with disabilities, which reduce the chances or effectiveness of their acquiring the necessary skills (UNICEF, 2009), and carry this disadvantage into adulthood, for those who live that long. During a launch of child month hosted by UNICEF (2009) in Swaziland, a blind child speaking on behalf of disabled children urged government to act swiftly and scale interventions to assist people living with disabilities. The child further reiterated the need to protect disabled children from abuse, and urged parents who have disabled children to accept them as they are, give them the best opportunities and not hide them. Most disabled children are trained through vocational studies to earn a living using their hands as they were not coping in classroom due to lack of appropriate curricula and studying materials. In this way, most children develop fondness for school, a place for socializing, creativity as well as thinking other than a place where they always felt frustrated (UNICEF, 2009).

Children living with visual impairment, or any other disability, face barriers to education and are highly unlikely to achieve education qualifications, as less expectations as well as demands are

placed on them (Gooding, 2006; Lwanga-Ntale, 2003). The United Nations General Assembly (1996) reported that disabled children remain unreached by education, as over 50% were excluded from accessing education either by law of public education system, or lack of legislation for education system, whereas only 1% received education in some countries. In Andhra Pradesh, India, females of all ages were reported to have a higher prevalence of blindness compared to males, resulting in female blind children being less likely to be enrolled in schools (Dandona and Dandona, 2003). Gilbert and Ellwein (2008) indicated that only 5% to 10% of the children with visual impairment in developing countries received some form of education.

In South Africa, basic education is compulsory for children aged between seven and 15 years old. However, Donohue and Borman (2014) reported that the majority (70%) of those living with disability were out of school. Visual and hearing disabilities were the most common disabilities, as supported by the 2011 census (Department of Social Development (DSD), Department of Women, Children and People with Disabilities (DWCPD) and UNICEF, 2012). Moreover, a recent Basic Education report indicates that 2 483 children were partially sighted, with only 1 184 being enrolled in special schools for the visually impaired (Department of Basic Education (DBE), 2014).

Perceptions, attitudes and beliefs of parents and teachers affect the inclusion of blind children in schools (Gooding, 2006; Jones, 2000). A Ugandan study listed some barriers contributing to the lack of enrollment of disabled children, including the bad peer behaviour, such as bullying and teasing, higher fees for special needs schools, a sense of shame from parents, and stereotyping children into particular vocational skills (Gooding, 2006; Jones, 2000; ACPF, 2011). Agesa (2014) in Trans-Nzoia, Kenya, identified 'being dependent' as negatively impacting attitude and social relationships. Thus, most children lack motivation, and learning is hindered as a result of being overprotected by parents, guardians and caregivers.

Visually impaired children attending mainstream schools find themselves in a strange environment among their sighted peers, who in most cases lack knowledge and awareness about visual disability. In addition, these children rely mostly on their hearing and occasionally touch senses, while they are sometimes neglected by the overburdened teachers who fail to make sense in their

verbal explanations (Agesa, 2014). Therefore, a clear indication from these attitudes, beliefs and perception indicates the number of children not schooling will increase compared to those on the waiting list to enroll due to the limited spaces in schools for the visual impaired and blind (DBE, 2015; DSD, DWCPD and UNICEF, 2012; Human Rights Watch, 2015). The lack of eye health awareness campaigns in schools to benefit their surrounding communities' results in parents and teachers remaining uninformed about the opportunities and consequences when children do not access ophthalmic services (Wedner et al, 2008; ACPF, 2011).

The specialized instruction required by visual impaired children needs to be improved, as many of those who do complete their schooling do so without mastering the essential knowledge or skills to further their education, enable independent living in their communities and gainful employment (Martinez, 1997; Jones, 2000; Muhit, 2007). The shortage of specialized skills, such as orientation and mobility specialist, restricts these children's access to services that are essential for their daily living (Martinez, 1997; Jones, 2000). This problem is worse in developing countries, specifically in rural areas, where most of the critical skills, such as braille, travel skills, and the effective use of their remaining vision are being taught by people who are not qualified (Martinez, 1997; Jones, 2000; Muhit, 2007). Another detrimental perception to be addressed is that most schools for the blind are very costly, the education taking place in normal classroom environment similar to that of sighted children, with little difference in cost (Martinez, 1997; Jones, 2000; Muhit, 2007). The lack of specialized skills necessary to recognize and address vision loss leaves most children with undiagnosed vision loss throughout their schooling experience. This may also mean that the specialized resources and personnel required cannot be channelled and allocated correctly due to the limited data about the incidence of visually impaired children (Corn et al, 1996; Muhit, 2007).

3.3.3 Violations of good practice, discrimination and invisible children

Organizations such as UNICEF, UNESCO and WHO have collaborated to address issues of children's health and rights, including those living with disabilities (Jones, 2000). However, it cannot be assumed that these initiatives will automatically benefit those who need it, the most marginalised children. Through emerging research, a range of strategies, such as awareness campaigns, have been suggested and have yielded positive results (Save the Children/UK, 1999; Jones, 2000). Jones (2000) described good practice as not absolute or fixed, referring to the fact

that what is considered as progress in one country may be perceived as backward in another. Ethiopia has shown considerable progress by availing resources to schools following the exclusion of disabled children from being educated, while others, such as Swaziland and Zimbabwe, are far behind in improving the situation for visually impaired children (Jones, 2000).

Visually impaired and blind children are faced with more problems than normally sighted children, particularly in countries with limited health resources, severely impacting on the disabled child. This may therefore be considered a violation of their rights, as the right to access eye health care has not been implemented. This applies in situations whereby all children in a family or community are able to attend school except the blind child. A survey in Zimbabwe revealed that schools only allowed a few of the local disabled children to enroll due to inadequate teacher skills, thereby not only denying those not enrolled their education right but also the opportunity for integration into society (Save the Children/UK, 1999; Jones, 2000). The fact that a child is blind is a barrier itself to attending educational and health facilities. Other barriers may be due to the physical environment, to a lack of access to existing ophthalmic services, as well as the behaviour or attitudes of family and community members, which results in low self-esteem (Jones, 2000; Gilbert et al, 2008; Jadoon et al, 2007).

The invisibility or hiding of disabled children from society happens all over the world due to a lack of rehabilitation facilities (Save the Children/UK, 1999; Jones, 2000). Cross (1998) indicated that children with any form of disability are not seen as children and that abusing a disabled child is not considered inhuman. In this instance, the visually impaired or blind child is disadvantaged, as they cannot identify the culprit, while the law is not designed to intervene in punishing these criminals severely when apprehended. These children are commonly identified by their impairment rather than as children who happen to have impairment (Jones, 2000).

3.3.4 Challenges facing children living with visual impairment and blindness

The absence of programmes to identify children living with visual impairment and blindness to be examined, treated, referred or rehabilitated at an early age in communities and schools adds to the burden on parents, guardians and caregivers of disabled children (Muhit, 2007). The identification of children living with blindness can be done using effective, participatory approaches and

community based key informant methods (Muhit, 2007). The advantages of using these methods are to provide data on the causes and frequency of visual impairment and blindness among children in communities, and to identify those who need eye health services, whether educational, clinical or rehabilitative (Muhit, 2007).

The attainment of living a productive and independent life is often not optimal for blind persons, as the impact of social challenges is more deeply felt compared to the way they feel about the physical impact of their limitations (Corn et al, 1996; Muhit, 2007; Demissie and Solomon, 2011). The causes of blindness pose more challenges to physicians in the clinical setting, while teachers and parents also face uncertainties in dealing with these children (Hoyt and Good, 2001). The perception of the public has an indirect impact on the visually impaired, as they are perceived to be incapable of functioning in society as normal citizens (Martinez, 1997; Jones, 2000). Consequently, they often face some form of prejudice that can be eliminated by educating the public (Martinez, 1997; Jones, 2000). Awkwardness on the part of the sighted people when interacting with the blind often makes them feel as inferior in society, less expectations from them despite their achievements in life (Corn et al, 1996).

3.4 Causes of visual impairment and blindness in children

Data on visual impairment and blindness varies regionally due to factors such as socio-economic status, access to eye care, environment, climate and social factors (Policy brief, 2011; Apple et al, 2000; Rawashdeh et al, 2006; Kazmi et al, 2007). The causes of visual impairment and blindness in children are reviewed globally, for Africa and sub-Saharan Africa.

3.4.1 Globally

Childhood blindness remains a significant health problem although its magnitude is less when compared to elderly blindness (Ferife et al, 2005; Thapa et al, 2011). Globally, an estimated 815 million children are reported to be in need of RE correction (Wedner et al, 2008), while childhood blindness accounts for approximately 4-5% of the overall blindness (Siddiqui, 2009). In the case of children, it is difficult to obtain reliable blindness prevalence estimates for many reasons, however, evidence indicates a variation of 0.3/1000 from developed nations to over 1.0/1000 in the developing world (Gilbert & Foster, 2001). For the poorest regions of the world, this translates

to over 400 blind children per million population compared to 80-100 blind children per million for developed countries. Approximate 500 000 children become blind each year, with 1.5 million already blind, five times higher in the poor regions. The situation is so severe that it is estimated of every minute a child goes blind, with 60% dying within a year after becoming blind (Adio and Komolafe, 2013). Bhattacharjee et al (2008) estimated that the prevalence of childhood blindness ranges from 0.3 per 1000 children in affluent regions to 1.5 per 1000 children in poor communities. Njepuome et al (2012) reported that the main causes of blindness in high income countries were optic nerve and visual pathway lesions. Inadequate living conditions in low income countries, compounded by negative health determinants, can result in blinding conditions, such as trachoma, river blindness, ROP, eye injuries VAD, measles and RE. Cataracts, strabismus, bacterial and viral conjunctivitis, lid infections and cysts are common among children, and can result in visual impairments due to late detection. In addition, as a result of the lack of services for eye health, communities often resort to traditional remedies without understanding the cause of the condition and the consequences of this treatment, which in most instances exacerbate the problem (WHO, 2004; Pascolini and Mariotti, 2012).

3.4.2 Africa

The African continent has high rates of population growth that are escalating, coupled with incompetence's from governments to devise health strategies that provide adequate and efficient health services to their people (Lewallen and Courtright, 2001; Oduntan, 2005). It is therefore not surprising that more cases of visual impairment and blindness are reported in rural areas where the necessary services are scarce or absent (Adala, 1983; Gyasi et al, 2007; Bejiga, 2001). Approximately 1.3 million blind children live in Africa (18%) (Apple et al, 2000; Steinkuller et al, 1999), with RE being relatively low (1.8%) in most African countries, reportedly too low to justify the prioritization of RE screening only (Wedner et al, 2008)

3.4.3 Sub-Saharan Africa

The sub-Saharan region has been reported to have the largest burden of blindness in the world. Kello and Gilbert (2003), Hussain et al (2011) reported that there were approximately 1.4 million blind children below 15 years of age, while over 12 million children between the ages of five to 15 years were visually disabled due to uncorrected RE or inadequately corrected RE. This estimate

represents 0.96% of the global prevalence of blindness. Even among children, the sub- Saharan region has the largest burden of blindness worldwide, with 1.24 children per 1000 compared to 0.3 per 1000 in Europe and 0.8 per 1000 in India (Gilbert and Ellwein, 2008; Gilbert et al, 2008).

Early intervention is essential, as 50% of children's blindness is avoidable, which makes child eye health in the region a priority at every level, including community, primary, secondary and tertiary levels. In addition, population based surveys suggest that approximately 90% to 95% of the 12 million visual impaired children are affected by myopia. Although research indicates that approximately 90% to 95% of the 12 million visually impaired children have refractive errors, many have had eye diseases and injuries. Ovenseri-Ogbomo and Omuemu (2010) reported a prevalence of 0.9% for low vision and blindness of 0.1% among school going children in Ghana using the international classification of diseases. In Ghana, children with low vision (2.5%) were found to have visual acuity of 6/60 in the better eye, and either light perception or hand movement in the worse eye (Ovenseri-Ogbomo and Assien, 2010), while South Africa has an estimated prevalence of 0.47 per 1000 children (National Department of Health (NDOH), 2002). The causes of blindness in children in Swaziland are unknown, however, a report by Pons et al (2012) indicated the presence of childhood eye diseases, according to WHO extrapolations, with the percentage not being indicated. Many have indicated the interference in education and normal development caused by childhood blindness (Gilbert & Foster 2001; Apple et al, 2000; Siddiqui, 2009).

3.5 Factors influencing visual impairment and blindness

Several factors influence visual impairment and blindness, and include socio-economic status, age, gender, race and geographic location, which may keep the patient from receiving specialized attention timeously, consequently hampering the visual prognosis (Serrano et al, 2003; MacGwin et al, 2005; Arroyo et al, 2003). Visual impairment in the active years of life will be particularly devastating for the affected individuals, having social implications regarding loss of productivity and delaying rehabilitation, resulting in serious vocational and economic consequences (Negrel and Thylefors, 1998). This section reviews issues of socio-economic status, role of vision screening in children and role of teachers as vision screeners.

3.5.1 Socio-economic status

The distribution of the majority of cases involving young children highlights the socio-economic burden of visual impairment and blindness in poor communities. In general, people in rural areas experience lower access to health care services and are more exposed to the causes of visual disability than their urban counterparts (Madden et al, 2002; Lewallen and Courtright, 2001). Rawashdeh et al (2006) reported that Africa, Latin America and Asia are where the majority of blind people reside, the prevalence of blindness being 10 to 14 times higher than in developed countries.

Almost two million children in Africa are wrongly placed in blind schools as a result of not having any eye exam with appropriate optical compensation for their high RE (ACPF, 2011). Blind schools in Ethiopia were reported to have over one third (68%) of children blind or with visual impairment that were potentially avoidable (ACPF, 2011). A report from Ghana estimated that 40% of children enrolled in blind schools had low vision and were not being totally blind (ACPF, 2011).

A study by Ovenseri-Ogbomo and Assien (2010) in Ghana showed that most of the children who were examined for RE had parents who were of medium socio-economic status (47.9%), while 42.2% had parents who were from low and 9.9% from high socio-economic status. Furthermore, 13.3% of the children examined were reported to have been examined previously by outreach teams or in churches, with 0.3% having spectacles that under corrected their visual deficits. Most of these children had parents from high and medium socio-economic status (Ovenseri-Ogbomo and Assien, 2010). A study by Ovenseri-Ogbomo and Omuemu (2010) reported that only 0.6% of the children examined had previously had an eye test in Ghana. In Cape Coast Municipality, Ghana, the children examined had parents from low socio-economic group (52%) compared to those from medium (36.7%) and high socio-economic groups (10.6%) (Ovenseri-Ogbomo and Omuemu, 2010).

3.5.2 Role of vision screening in Children

The WHO defines children's vision screening as a systematic approach to identify visual problems, with the focus on commonly occurring conditions that can be easily remedied (Gilbert and Foster, 2001). Ideally, children should have regular vision screening, as vision is an essential component of their developmental milestones. This should take place before the age of one, at three years of age, and at six years or before they begin formal schooling (International Agency for the Prevention of Blindness (IAPB), 2014). Providing such services ensures that children develop appropriately, have equal opportunities and a balanced social life (Muhit, 2007). In addition, vision screening can generate data on the causes and frequency of visual impairment and blindness, which help to identify those in need of eye health services, such as educational, clinical or rehabilitative (Muhit, 2007).

3.5.3 Role of teachers as vision screeners

Reports from Tanzania have examined the role of teachers as vision screeners, however, comparisons between studies cannot be applied as different techniques were used to identify the visual deficits (Powell et al, 2009). In Tanzania, 80% of the visual deficits were correctly identified by primary school teachers among children and appropriate spectacles were prescribed. Powell et al (2009) further elaborated that the literature makes no reference to studies where screening was done by a nurse, ophthalmic assistants, orthoptists and doctors in school. Hence, 96.5% of the children who received glasses as a form of treatment for their visual deficits were reported to be wearing them in class, according to information obtained from teachers (Powell et al, 2009). Vision screening in India has become common, although it is mostly done in urban areas. Students failing teacher's vision screening were between 40% and 90% in India (Powell et al, 2009).

3.6 Barriers to eye health care

Visual impairment and blindness affect millions of children, particularly in the developing regions, such as in many African countries, where many challenges impede the improvement of eye health care for children. Poor health policies, poverty, weak economy and poor leadership have been reported to be among the factors contributing to poor eye health care services in many affected

countries (Siddiqui, 2009; Borrel et al, 2013; Gilbert et al, 2008; Jones, 2000). Those with poor economies, such as Swaziland, struggle to advance better policies in health and education, suggesting the need for health education in schools. The lack and uneven distribution of eye health services is compounded by government's apparent failure to prioritise eye health care policies (Borrel et al, 2013). Vulnerable groups, such as children, have poor access to health facilities and many cannot afford to pay education and health fees (Siddiqui, 2009; Borrel et al, 2013).

Public health agencies have played a crucial role in developing policies aimed at improving the health of all people, regardless of their socio-economic status. These policies have focused on empowering communities, while effective evidence based prevention programs have been formulated through partnering with communities (Derose et al, 2011). In addition, the agencies have formed partnerships with health care providers to help with comprehensive long-term and sustainable initiatives (Derose et al, 2011). Several studies have reported on eye health care barriers, with most of the literature having concentrated on general health care. It is possible that barriers to accessing eye care services vary from one country to the other, and broad generalizations should be avoided as each country's reports should be studied individually. The most common barriers to eye heath are summarised in Figure 3.1, these being environmental, socio cultural, geographical, financial, health status and educational.

Financial

- Income
- Employment status
- Insurance

Geographically
- Inappropriate distribution
- Transport availability
- Being handicap
- Regional differences

Health status
- Systemic disease effect
- Patient mental status

Barriers to eye health care

Environmental
- Home environment
- Long appointment
  waiting times
- Scheduling
- Transportation

Socio-cultural
- Language
- Thoughts
- Customs
- Beliefs
- Values
- Social groups
- Religion
- Ethnicity

Educational/knowledge
- Inability to obtain
- Understanding and using
  information
- Influence and perceptions

Figure 3.1: Barriers to eye health care (MacKinney et al, 2014)

3.7 Factors influencing the utilization of eye care services

Many researchers have reported that access is central to measuring the performance of a health system, and plays an important role in policy formulation and design (Levesque et al, 2013; Obrist, et al, 2007; Bashshur et al, 1971). Access is defined as the ability to receive preventive and follow up care (Frazier and Kleinstein, 2009; Shirima and Geneau, 2006). Other authors characterise access as entry into a health care system or factors influencing its use (Levesque et al, 2013). Alternatively, access may be considered in the context of those in need or at risk of having appropriate and proportional available facilities to their existing need of care (Aday and Andersen, 1974). According to Boffa (2002) and Frenk (1992), availability of health services is determined by the physical existence of health resources with sufficient capacity to deliver quality services for the target population. However, Ware (2013) argued that the availability of health services does not translate into access and utilization. Bashshur et al (1971) suggested that accessibility in a

health care system is expressed through functional relationships between medical facilities and the population, by reflecting all impediments as well as difficulties and facilitators encounterer for beneficiaries to access health care.

Levesque et al (2013) and Scheffler et al (2015) identified five dimensions derived from the Penchansky's (1977) model that determine the supply and demand of access to health care, these being: i) approachability, ii) acceptability, iii) availability and accommodation, iv) affordability, v) appropriateness (Figure 3.2). To ensure access, these five dimensions of accessibility need to interact and correspond with the abilities of the population, these being: i) ability to seek, ii) ability to perceive, iii) ability to reach, iv) ability to pay, and v) ability to engage (Levesque et al, 2013; Scheffler et al, 2015).

3.7.1 Elements of access

The five dimensions that affect the supply and demand of access to health care are:

i) *Approachability* relates to individuals that require health needs being able to identify the existence of services that can be accessed and have impact. The notion of ability to perceive plays a crucial complementary role, and is determined by factors such as knowledge about health, health and sickness beliefs and health literacy.

ii) *Acceptability* relates to social and cultural factors to determine the possibility for people to accept the aspects of the services and the perceived suitability for them to seek health care.

iii) *Availability and accommodation* refer to the fact that health services can be reached both physically and in a timely manner. Availability constitutes the physical existence of productive facilities with sufficient capacity to provide services in both urban and rural settings, and is characterized by flexible working hours with virtual consultations.

iv) *Affordability* relates to the capacity to be able to pay for appropriate health services rendered. This is dependent on the capacity of the individual to earn an income to be able to pay for health care.

v) *Appropriateness* relates to the suitability of services rendered befitting the client's needs, with sufficient consultation times to determine appropriate diagnosis and prompt referral where necessary.
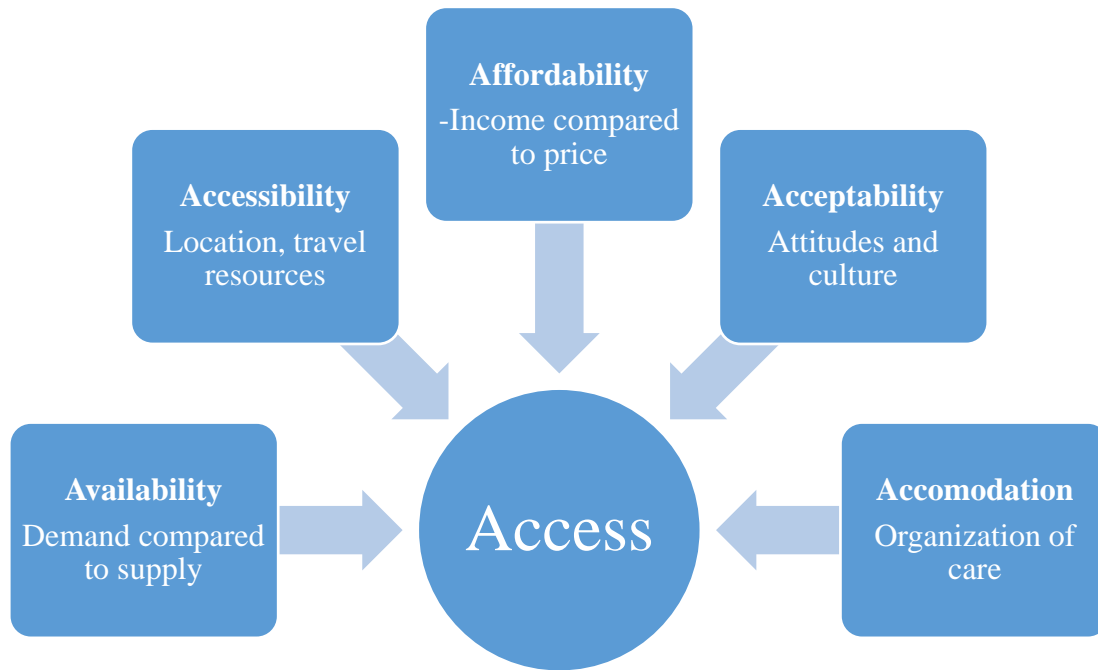
Figure 3.2: Penchansky's elements of access

In addition, various factors influence access to eye health care, and include cost of services; uneven distribution of health facilities; eye health workforce supply, public awareness of available services, physical accessibility, cultural appropriateness of services (health beliefs of community or individual), availability of services, particularly for those in rural areas, with technological support and regularity of service provision, and lack of knowledge about the need of eye health care (Anyinam, 1987; Whitehead 1992; Shirima and Geneau, 2006; Frazier and Kleinstein, 2009).

3.8 Access and barrier focused frameworks

The concept of access to health care has remained 'nebulous and obscure', regardless of the existence of various access frameworks. Arguments raised by critics of the frameworks have improved them to suit their health systems. Therefore, it appears important to review access and barrier focused frameworks with particular focus on the elements of access in order to identify their limitations and how these aspects relate. This will enable the researcher to develop an access framework that is not susceptible to limitations found in previous access frameworks. This section reviews validated access and barrier focused frameworks.

It is essential to evaluate available resources, the need and demand for health care. The exercise of identifying the resources and is a very comprehensive as a community epidemiology health approach, this being necessary to develop a sustainable framework (Ricketts and Goldsmith, 2005). The need to understand eye health care, its access and enabling factors, and barriers to access, as these form the basics of implementing an access framework is essential. Public health experts have developed multiple models to best structure theories of access to health. Ricketts and Goldsmith (2005) argued that although many theories exist, most of them have similar limitations, such as the inability to precisely define what constitutes access, no indications of feedback loops, time and experience of any access system, suggesting the need for policy oriented research that focuses on dynamic processes and individuals' adaptation, populations and systems.

With respect to the access focused frameworks, the availability of resources and the presence of the provider does not translate into automatic access, but to the use of services that provide equal potential, regardless of social class and geographic location (Donabedian, 1972). The socio-behavioral model by Andersen (1968) has been widely used as the foundation to formulate or expand various frameworks to improve access to health. This model depicts individuals' access to health care and considers the use of services as a function of three factors, these being health beliefs, demographics and individual characteristics. In 1974, Aday and Andersen revised the model to include health outcomes, health behavior and environmental factors. In addition, the model outlined the different measures of realized and potential access, for example, having a nearby clinic in the community and patients' satisfaction about the services offered. In 1975, Aday and Andersen developed a model proposing measurements of outcomes to assess called it 'appropriate' utilization, following criticisms of the earlier model that utilization does not necessarily lead to the desired outcomes. In 1997, they expanded the model to address issues pertaining to equity, health, efficiency and effectiveness of services. Factors such as marginalization or vulnerability of those from rural and remote areas and the homelessness were incorporated (Slifkin, 2002; Davidson et al, 2004; Balabanova et al, 2007).

Others have expanded the model and proposed that the 'fit' concept was an adjustment process between health care delivery system and the population (Frerk 1992; Ricketts and Goldsmith, 2005; Scheffler et al, 2015). The use of terms that were not clearly defined, but used

interchangeably (such as accessibility, availability and access), were noted as an internal problem for causing confusion, even among health experts, which Frerk (1992) tried to address in a series of 'domains' of access.

Although many public health experts still argue about what access entails, there is general consensus that the access framework developed by Anderson, Aday and Newman serves as a cornerstone to influence policy development (Ricketts and Goldsmith, 2005; Balabanova et al, 2007; Andersen et al, 2002). Earlier concepts focused on the characteristics of the health system rather than on those of the population, and access was measured by the outcome process and services utilization. Andersen and colleagues viewed this as a limitation, and expanded it to incorporate five components for appropriate utilization of services, these being characteristics of the health delivery system, utilization of health services, health policy, characteristics of the population at risk, and consumer satisfaction. The 'need' for care, 'predisposing' characteristics of an individual and 'enabling' structural characteristics were also viewed as part of the core for conceptualization (Ricketts and Goldsmith, 2005; Andersen et al, 2002). They reiterated the use of health status as an outcome indicator, which implied that focusing at community characteristics reinforced the need to determine policy effects at the community level.

Regarding the barrier focused frameworks, Frerk (1992) suggested that barriers within the health system, such as financial, organizational and ecological factors, may create resistance to access (Derose et al, 2011). Penchansky and Thomas (1981) suggested an approach on barriers to healthcare utilization that acknowledged individual socio-economic status, such as medical aid, income and source care. This model adopted the 'fit' concept within the five elements, however, it only focused on individuals' satisfaction about care received in each of the elements. As patient satisfaction, provider practice patterns, and service utilization are interrelated, it is assumed that they would be influenced by access variations (MacKinney et al, 2014).

The concept of 'fit' was further expanded by Taylor et al (1995), who described it as the interrelationship between the dimensions of need, demand and resources. The concept of access also focused on addressing issues of lack of utilization of existing health facilities. The tensions arising from limited resources, appropriateness and effectiveness assessment were highlighted to

play a vital role in enhancing access. Analysts have observed that access is dynamic, whereby patients react and interact with the system at all levels repeatedly, indicating a change in perceptions about the system (MacKinney et al, 2014; Derose et al, 2011; Balabanova et al, 2007). If patients are not satisfied or have negative perceptions about a health facility, it might result in lack of utilization of that facility. The focus has primarily been on dynamic influences of access and static barriers, with issues such as proximity of eye health professional or insurance coverage (contact lenses, glasses or eye surgery) having received limited attention (MacKinney et al, 2014; Derose et al, 2011).

Peters et al (2008), Ensor and Cooper (2004) used the dimensions of access to present their frameworks of 'demand and supply' regarding barriers, and their respective approaches were found to overlap, with minor differences between them. Peters et al (2008) considered quality of care as an integral component, while both Peters et al and Ensor and Cooper agreed that household location and service location were separate barriers. The mixed supply side of barriers, such as direct payment and waiting time for being attended to, were cited by Peters et al (2008), while Ensor and Cooper (2004) cited these as demand side barriers. This indicates that these factors are not within the control of public health services users, as pricing varies between health facilities, which are entitled to determine the price of access, surgery and medication. In addition, the long duration of waiting times affirms the inadequate distribution of staff and equipment in their respective facilities (Jacobs et al, 2011).

The Institute of Medicine (IOM) (1993) suggested access conceptualization that highlights outcomes as critical assess mediators based on four types of barriers namely: structural, financial, personal and cultural. The IOM conceptualization is used to monitors individuals' access, and focuses on personal barriers to using services, finances, structures and the appropriateness of services rendered. It is one of the models that explicitly focuses on access monitoring and equity. However, it was later updated to determine the planning selection on new delivery integrations and health care financing (Derose et al, 2011; MacKinney et al, 2014).

An innovative dimension of improving accessibility by using electronic devices to obtain information and service providers was recently introduced to reduce the effect of geographic

proximity between patients and providers (MacKinney et al, 2014; Gresenz et al, 2007). This system has had a considerable impact on access, as consumers and patients can interact and access health system electronically, thus reducing face-to-face encounters, which are no longer considered as exclusive indicators of utilization (MacKinney et al, 2014). Gresenz, et al (2007). Fortney et al (2011) listed multiple electronic devices that may influence access, which include social networking sites, cell phones, smartphones, secure chat rooms, on-line forum, interactive voice response, text messages, e-mails, clinic-based interactive video, home-based web-cams, mobile smartphone, personal monitoring devices, personal health records, and web-based portals among others. The reconceptualization of access through these electronic devices will help to address the traditional elements of access, such as geographical, financial and cultural (MacKinney et al, 2014; Gresenz et al, 2007). For instance, patients with diabetes mellitus were found to be well informed about the adoption of public eye health campaign through media platforms such as radio, regional television and newspapers in Australia (Muller et al, 2007).

3.9 Conclusion

Having reviewed the literature relevant to this research, it is apparent that very little research has been done in Swaziland to understand issues of childhood blindness, challenges faced by children living with visual impairment and blindness, causes of visual impairment and blindness, factors that may influence visual impairment and blindness, barriers to eye health care and factors influencing the use of eye services. With varying international trends and models between countries, it is essential to develop an access framework that suits the needs of the country after having analyzed the existing resources.

CHAPTER 4. METHODOLOGY

4.1 Introduction

The WHO launched the school health programmes in response to the challenges of deteriorating health, particularly in developing countries. UNICEF has played a leading role in ensuring that children have access to basic rights, however, those who are visually impaired or blind continue to be denied their basic rights, particularly in developing economies (Nutbeam, 1998; Davies and Macdowall, 2006; Jones, 2000; Muhit, 2007). Moreover, the rights of disabled children are not enshrined in Swaziland's government policies or constitutions, and the infrastructure is not conducive for their well-being. This chapter presents an overview of the methodology employed in this study, with the objectives and the methods for the two phases being presented in Table 4.1. The research design is followed by study setting and study population and sampling. The study aimed to investigate the barriers to access to eye health services encountered by children within the Swaziland public health system and to develop an appropriate access framework that will address their specific needs.

4.2 Research design

A cross sectional study design was used that entailed collecting data, while asking 'why' a certain phenomenon occurred in society, government or private institutions (Vaus, 2001). Eye care service delivery aspects were established using a mixed method approach (qualitative and quantitative). Purposive sampling was used to identify relevant study participants in government management positions, while stratified random sampling was used to identify the districts and schools in which school children, their parents and teachers were invited to participate.

Table 4.1: Study Objective and methods for the two Phases

Objectives		Methods	Phase
1	To undertake a desktop review of eye care policies in two neighbouring countries regarding child eye care programmes	General eye policies and child eye policies for Mozambique, South Africa and Swaziland (Source: National health Departments/Ministries websites)	1. Data collection
2	To determine current levels and factors that impact on access to children from the perspective of health and education officials	a. Ministry of Health and Education (Interviews with Directors and HODs of school health)	
3	To determine the availability of eye care facilities and services for children in Swaziland.	b. Eye Health professionals (HODs of clinics) completed the clinical facility assessment questionnaire	
4	To determine teachers', parents and eye care professionals' knowledge and practices about child eye health care	c. Parents b. Eye Health professionals d. Teachers (Questionnaires)	
5	To develop and validate a child eye health framework for Swaziland	Qualitative and quantitative data analysis (Objective 1-4) e. Stakeholders and experts for input and comment using Delphi technique Incorporate feedback and finalize the framework	2 Framework development

4.2.1 Qualitative research method

Qualitative research focuses on exploring and understanding a phenomenon of individuals or a group on how they ascribe to social or human problems (Denzin and Lincoln, 1994; Della Porta and Keating, 2008). Patton (2002) defined qualitative research as an attempt to understand the uniqueness of interactions in a particular situation, and has a self-proclaimed truth element from participants. Interpretation by those involved in the activities around them at a particular time, as well as understanding the finer details, constitutes the understanding of these interactions. The effectiveness of qualitative research is mostly viewed when data gathering consist of population particular behavior, opinions and values (Polit and Beck, 2008). This depicts the exact feelings that the society have towards any phenomenon, having either a positive or negative effect in their lives at any given moment. This further explains inductive process models and shaping factors incorporated that occur at the same time (Bernard, 2002).

Mays and Pope (1995) articulated that qualitative research has much to offer among those who have an interest in investigating health care, service provision and theoretical considerations for health policy analysis. It can be used to investigate the patients' practitioner perceptions, preferences, beliefs and attitudes, as well as how evidence is utilized into practice (Green and Britten, 1998). Considerable qualitative research has been conducted to provide solutions on a range of questions about social behavior involving patients' compliance, health professionals' decision making, as well the health system as a whole (Morgan and Watkins, 1988; Brady and Collier, 2004). Hence an attempt to obtain eye health care information within a diversified identified population is necessary. This background informed the utilization of qualitative research (interviews) in order to determine the health disparities that exist in the formulation of eye health strategies among children in Swaziland.

4.2.2 Quantitative research method

Quantitative research entails testing objective theories by examining the relationship between variables or outcome variables in a population (Hopkins, 2008; Brady et al, 2004). In turn, the variables are measured on an instrument expressed numerically for analysis (Hopkins, 2008; Brady et al, 2004). Creswell (1994) and Corbetta (2003) defined quantitative research as analysis of large sophisticated data. Furthermore, correlations, mean differences and relative frequencies can be utilized by the researcher to express the relationship between variables (Hopkins, 2008; Della Porta and Keating, 2008). Models in quantitative research maintain static design in which categories are interpreted prior to attempts to find cause and effect relationships either from a top down or up down approach (Mays and Pope, 1995). The use of quantitative research in the health science field has consisted mainly of hypothesis testing in randomized controlled experiments and randomized control trials. Thus, indicating preference in an attempt to generate representative data for the identified population questionnaires (Mays and Pope, 1995) were employed in the current study to determine the knowledge and practices of parents, teachers and eye health professionals about child eye health care among school children.

4.2.3 Mixed methods and triangulation

Della Porta and Keating (2008) defined mixed methods as the use of qualitative and quantitative methods to collect multiple data and using analysis techniques that complement one another. The

use of triangulation assisted the researcher to appreciate what is being offered by both methods to the answer research questions that arose due to complexities of various factors existing in the field of study. Bazely (2002) and Della Porta and Keating (2008) support the use of qualitative methods as a supplement to quantitative methods only if the logic (deductive or inductive), the type of investigation (confirmatory or exploratory), type of used data (numeric, textual, unstructured or structured), analysis method used (statistical or interpretive), underlying paradigm (interpretative or positivist) and explanation approach (process theory or variance theory) are similar. However, it is important to note that qualitative and quantitative methods have their strengths and weaknesses, hence a mixed method was deemed appropriate. It is therefore essential to appreciate the persuasive evidence strength offered using mixed method approach to decrease the level of uncertainty, as more than one independent measurement is required for a proposition (Della Porta and Keating, 2008; Pauly et al, 2013). Furthermore, the complexities of health care are diverse, and can consist of socio-economic, environment factors and political issues (Della Porta and Keating, 2008; Pauly et al, 2013). Adopting a triangulation method was therefore necessary, as the current study also explored eye health plans and school health programmes, while the questionnaires and interviews obtained information on barriers to eye health care. Therefore, both qualitative (interviews) and quantitative data (questionnaires) was triangulated to develop the draft access framework.

4.3 Study setting

Two of Swaziland's four regions were purposively selected for the study, Hhohho, a more affluent urban region and Lubombo, a rural and poor region of Swaziland. Hhohho is located in the north east of the country, and contains the capital city of Mbabane, which has all the national government buildings, most businesses, and a mainly urban population. The terrain is undulating, with transport consisting of privately owned cars, busses and locally owned mini-bus taxis. Access into the city is on tarred roads, and it is the economic centre of the country. The country's main public sector hospital is located in the city, as are a number of private health care practitioners, including optometrists.

The Lubombo Region runs north/south along the Mozambique border, is very rural in nature, consisting mainly of scattered rural homesteads that are accessed by dusty roads. There are a

number of small towns that provide limited employment, with few residential areas having electricity and water. It is a culturally traditional area, with high levels of unemployment, HIV/AIDS, child-headed families and school drop-outs (UNICEF Humanitarian action report, 2008; MoTE, 2012; Ministry of Economic Planning and Development, 2005). Education levels among adults is low (MoTE, 2012) which can affect their engagement with public sector health services, as many first seek help from traditional healers. In the absence of eye health issues awareness, parents may not seek timeous help for their children's eye health problems.

Within both regions, the study sites were public and missionary eye clinics, primary and secondary public schools, and Health and Education Ministries. There are very few public sector eye clinics, these being located in Hhohho Region, and staffed by an ophthalmologist, optometrist and ophthalmic nurses. Problems that need more specialised attention are referred to South Africa, which requires the funding from government for those who cannot afford to be referred and attended to. Spectacles are provided at eye care clinics throughout the country. The missionary eye clinics are funded through foreign or church donations, and are staffed by cataract surgeons, optometrists and ophthalmic nurses.

The public sector schools are generally overcrowded with teacher/pupil ratios as high as 1:70 particularly in urban and highly populated areas as parents seek better education facilities for their children. Rural schools particularly those found in poverty stricken areas have lower teacher/ pupil ratios of 1:15 as most lack access to electricity and water, sanitation and shelter (MoTE, 2012). Therefore, the primary policy goal aimed at reducing the national primary repetition rate to 5% for the achievement of teacher/pupil ratio of 40:1 remains unattained (MoTE, 2012).

The study participants were selected from the following institutions and regions:
- **Ministry of Health and Education**: The ministries which are mandated to educate and keep citizens healthy, are the Ministries of Education and Health respectively. The school health programme falls under both the Ministries of Health and Education and their mandate is to provide health services in schools. Given that the Ministry of Health has to provide health services, there is a need to adopt a multi-sectoral approach and multi-disciplinary approach to ensure the school health programme is efficient and effective.

- **Hhohho and Lubombo Regions**: These were randomly selected out of the four regions in the country.

- **Public sector and mission eye clinics**: With very few existing clinics in the country, a saturated sample was utilized in selecting the eye clinics included in the study. The eye clinics are staffed with an ophthalmologist, cataract surgeon, optometrists and ophthalmic nurses. Only 1 mission clinic is not attached to a hospital. Five out of seven health facilities in Swaziland offer eye care services, of which three are government hospitals and one a mission hospital while only 1 clinic offered eye care services. All hospitals were selected for clinical facility assessment due to a limited number of hospitals offering eye care services and easier accessibility as shown on the map (Appendix F).

- **Primary and Secondary Schools**: Stratified random cluster sampling was used to select schools included in the main study as distribution is skewed between the two regions with Hhohho having more schools (226) than Lubombo (178). The ages of the children in schools ranges from 6 to 18 years (MoTE, 2012). Teachers, pupils and parents as participants were accessed at schools.

4.4 Study population and sampling

The study consisted of a number of participants who were either purposively or randomly selected from the institutions as described above, the intention of including these stakeholders being to ensure that all the factors that affect children's access to eye care services are addressed (Figure 4.1).

The study population consisted of the following:

a. **Officials:** Officials in the Health and Education Ministries are involved in policy designs and implementation, and are therefore important stakeholders in the education sector. The officials purposively selected for this study were: the two Directors and two HODs of school health in each of the two Ministries, resulting in a total of 4 participants in this group. The officials were required for Objective 2.

b. (i) **Eye health professionals:** Eye health professionals employed at the various health care facilities in the entire country were selected to identify the difficulties encountered at their workplace regarding children accessing their services, and to offer advice on how service delivery can be improved. All available eye health professionals in each clinic were asked to fill in the questionnaire (optometrists, ophthalmologist and ophthalmic nurses). The eye health professionals were required for Objective 4.

(ii) Head of department or clinic: persons in these positions were purposively selected to complete the clinical facility assessment questionnaire of all eye health care facilities in the country in order to determine the services currently available. Eye clinics were defined as facilities where at least one ophthalmologist and/or one optometrist work, and that deliver outpatient consultations, refraction, spectacle dispensing or surgical services. A clinical facility assessment questionnaire was administered in government hospitals to understand current approaches to managing referrals providing child eye health as well as the resources that exist. The HODs of eye clinics were required for Objective 3.

- Inclusion criteria: All eye health professionals working in the public sector and mission eye clinics
- Exclusion criteria: Eye health professionals not working in the public sector and mission eye clinics

c. Parents: Identifying vision problems can be difficult, even for the most perceptive parents or guardians, constituting a barrier to accessing relevant eye health care at an early age. Parents therefore need to be aware of child eye health care issues and available services in order to seek long term solutions. For the parent's questionnaire, 10 children were selected randomly in thirty five primary and seven secondary schools to get a total of 170 parents. With this sample size, the level of knowledge was estimated to be approximately 16% and a 95% probability assuming 50% of parents were knowledgeable, based on the advice of the statistician as calculated by the formula:

$$n \approx Z^2(P)(1-P)/B^2$$

Where P = 0.5, B=0.16 * 0.5 = 0.08 and; Z=2.0 for a 95% confidence interval. The parents were required for Objective 4.

- Inclusion criteria: Parents of selected children in public schools
- Exclusion criteria: Parents of non-selected children in public schools

d. **Teachers:** Teachers spend most of their time with children and can be influential in curbing barriers to eye health care. Forty two schools were selected within the two regions (Lubombo and Hhohho), with thirty five being primary and seven being secondary. At each of the primary schools, 10 teachers were identified for participation, while this increased to 20 at the secondary schools. This resulted in a total anticipated sample size of 240 teachers, with the level of knowledge being estimated to be 16%, assuming that 50% of teachers are knowledgeable. The teachers were required for Objective 4.

- Inclusion criteria: Teachers within the sampling frame
- Exclusion criteria: Teachers not in the selected schools

e. Eye health care experts: due to their experience in policy design, formulation and implementation in child eye health or epidemiology, specific eye health experts were approached to give comments and critically appraise the access framework document for children in Swaziland. The eye health care experts required for Objective 5 consisted of:

1. Director of Education - Public Health UNSW (Australia) Adjunct Senior Lecturer; UKZN (South Africa) Honorary Lecturer, SALUS University (USA) Adjunct Faculty
2. Programs Director, Child Eye Health and Low Vision (Brien Holden Vision Institute)
3. Africa Programmes Manager (Brien Holden Vision Institute)
4. Chairman; Department of Optometry and Vision Sciences, Masinde Muliro University of Science and Technology Faculty; Brien Holden Vision Institute, Public Health Division
5. Lecturer at University of Johannesburg (Academic)
6. Academic Leader University of the Free State (Academic)

The sampling frame consisted of all 110 and 200 public schools respectively. Probability proportional to size (PPS) cluster sampling was employed as it has an advantage of creating a study sample in which each participant has the same probability of being selected (Levy and Lemeshow, 2008). The numbers of interviews were predetermined in each cluster, making field work planning easier using saturation sampling.

4 Regions
Hhohho, Lubombo, Manzini, Shiselweni,

Ministry of Health
7 Hospitals
3 public: 2 Hhohho, 1 Shiselweni.
1 mission: Lubombo
1 mission clinic: Manzini

Ministry of Education
Convenient saturated sampling:
- Director of Education
- HOD School Health

Ministry of Health
Convenient saturated sampling:
- Director of Health
- HOD School Health

2 Regions Randomly selected
Hhohho and Lubombo

Lubombo
110 schools

Hhohho
200 schools

Hospitals with eye clinics in the country
Convenient saturated sampling
- Clinical facility assessment questionnaire
- Eye health professional Questionnaire

Stratified random
cluster sampling:
15 Primary
2 Secondary

Stratified random
cluster sampling:
20 Primary
5 Secondary

All teachers

All teachers

Random selection of 10
children for parents to
complete questionnaire

Random selection of 10
children for parents to
complete questionnaire

Figure 4.1: Sampling procedure for Phase 1

4.5 Data collection methods

The data collection tools are described with respect to Objectives 1 – 4 (Phase 1) and 5 (validation of the framework). The methods consisted of document reviews, interviews, questionnaires and input comments from policy designers and/or experts as well as other relevant stake holders.

- **Eye health documents/health policy documents:** (Objective 1)
- The relevant documents were identified and obtained electronically from the respective national health department website. The selected guidelines represent the eye health policy in the respective countries analyzed in the study.

   1. *Swaziland:* the following policy documents were reviewed:

   - National School Health Policy (2011)
   - National Health Policy (2006)

   2. *South Africa:* the following guidelines were reviewed:

   - National Guideline, The Prevention of Blindness in South Africa (2002)

   3. Mozambique: the following documents were reviewed:

   - The National Ophthalmology Plan 2007-2010

   - Country Eye Health Strategy 2012-2015

- **Interviews:** Key Health and Education officials were identified and interviewed regarding their perspectives on government policies, current and future efforts in providing child eye health as well as their perspectives on educational policies, current and future efforts in providing quality education with particular focus on the school health programme. Standard questionnaires provide strict control of respondent behavior as the question are predetermined and presented in a specific and constant manner (Boynton and Greenhalgh, 2004). Questionnaires offer an objective way of collecting information about individuals' behaviors, attitudes, beliefs, knowledge and practice through special kind of engagement (Boynton and Greenhalgh, 2004). The current study used previous validated questionnaires

(Gilbert, 2008, Mafwiri and Gilbert, 2010; Borrel et al, 2013; Mashige et al, 2016) as a form of data collection which were modified to suit local conditions.

a. **Ministry of Health and Education:** Interviews (Objective 2). The Directors and HODs in both ministries were interviewed at their respective offices for convenience (Appendix H). The interviews were divided into two sections;

A: Overview perspective policies and of the relationship between health and education.

B: Child eye health issues.

- **Questionnaires:** MacDougall and Fudge (2001) defined in-depth interviews between informants and researcher aimed at understanding informants' perspective, experiences or situation conveyed in their own words. Grbich (1998) highlighted the difficulties encountered in gaining access to interview people in elite positions such as directors, judges etc. whereas in a community setting, determination is required as the people do not have a lobbying voice yet their views are critical and contribute significantly to any assessment conducted.

b. (i) **Eye health professionals**: Questionnaires (Objective 4) (Appendix I)

The questionnaire consisted of three sections:

A. General and demographics questions

B. Knowledge about eye care and services

C. Practices about eye care

This consisted of closed-ended questions, with options from which replies had to be selected. All questions requiring positive and negative responses were followed by stating reasons why a particular response was chosen to eliminate errors and bias.

(ii) **Clinical facility assessment questionnaire** (Objective 3) (Appendix G)

The questionnaire consisted of eleven sections:

1. General Information
2. Available Human Resource
3. Facility Structure
4. General Daily Duties
5. Statistics
6. Available Services
7. Clinical Duties
8. Equipment
9. Administrative Procedures
10. Utilities
11. Difficulties encountered in the work place

c. **Parents**: Questionnaires (Objective 4) (Appendix I)

The semi-structured questionnaire consisted of three sections:

A. General and demographics questions
B. Knowledge about eye care
C. Practices about eye care

This consisted of closed-ended questions, with options from which replies had to be selected. All questions requiring positive and negative responses were followed by stating reasons why a particular response was chosen to eliminate errors and bias.

d. **Teachers**: Questionnaires (Objective 4) (Appendix I)

The questionnaire consisted of three sections:

A. General and demographics questions
B. Knowledge about eye care
C. Practices about eye care

This consisted of closed-ended questions, with options from which replies had to be selected. All questions requiring positive and negative responses were followed by stating reasons why a particular response was chosen to eliminate errors and bias.

4.6 Pilot Study

A pilot study was conducted for the following components of the study:

c. Parents: the questionnaire was piloted at a school that was not included in the study area.

d. Teachers: the questionnaire was piloted in a school that was not included in the main study.

The questionnaires were piloted in order to assess logistical and operational aspects before the main study commenced. Questionnaires for parents and teachers were distributed and collected in the respective schools. They were requested to complete the questionnaires independently. The pilot indicated areas of improvement in the logistical and operational aspects of the study.

4.7 Data collection Process

The data collection process is described with respect to the study Objectives, specifically Objectives 1 – 4 (Phase 1), to validate the draft access/framework guidelines.

a. **Ministry of Health and Education** (Objective 2)

The directors and heads of school health in both ministries were selected for participation in the study. A prepared set of semi-structured questions, based on the overview perspective and specific child eye health issues of health and education was done before the interviews were conducted and a copy was presented to participants for familiarization purposes (Appendix H). Before starting the interviews, verbal consent was sought, issues of confidentiality were outlined and assured. All interviews were recorded after obtaining permission to do so from the participants. Written notes were taken to facilitate an understanding of the interaction during the session (Gubrium and Holstein, 1997).

Interviews lasting approximately 40 minutes per participant were conducted using semi-structured interview guides/questionnaire. Follow up questions were asked to clarify the participant's initial responses and as a result varied from one participant to another. Immediately after the interview, a member check was performed with all participants which allowed for preliminary themes,

interpreted in the interview, to be reviewed with the participants. Transcripts were sent to the participants for verification of the accuracy of the interviews. This was done to ensure credibility of the data. Also, a summary of the analysis was given to each participant for member checking and each participant was asked to comment on the correctness or accuracy of the descriptions and impressions derived from the interviews. They were further advised that if the transcriptions were not an accurate reflection of the contents of the interview as they remembered it, arrangements would be made for the recording to be heard together with the researcher and the transcription amended accordingly. None of the participants made any changes or corrections to the original transcripts and all indicated that their transcripts were accurate reflections of their interviews.

b. Eye health professionals (Objective 4)

Validated questionnaires were utilized for eye health care professionals who work in the public sector to determine knowledge and practices in relation to child eye health in Swaziland (Appendix I). A saturated sample was used for filling in the questionnaire due to few operating eye clinics in the country. Participants were first informed about the purpose of the study before being requested to participate. Written consent forms were signed by each participant after familiarizing themselves about what the study entails before filling in the questionnaires

A clinical facility validated assessment questionnaire (Objective 3) (Appendix G) was utilized for observational work in the eye clinics available in the country. Questionnaires were distributed to the heads of departments in each clinic that offered eye care services. The completed questionnaires from each facility were collected by the researcher. To identify participants, a saturated sampling procedure was used due to the few facilities that offer eye care services. A head of department or clinic was purposively selected to complete a service questionnaire as they were considered most appropriate to understand the Ministry's approaches to managing referrals, providing child eye health resources, and commenting on the daily problems encountered during this process. Questionnaires were distributed to the public sector eye clinics that had at least one ophthalmologist/cataract surgeon or one optometrist providing outpatient consultations, refraction, spectacle dispensing or surgical services. Written consent forms were signed by each participant after familiarizing themselves about what the study entails before completing the questionnaires.

c. **Parents** (Objective 4)

A validated questionnaire was utilized for parents to determine their knowledge and practices in relation to child eye health in Swaziland (Appendix I). Participants were first informed about the purpose of the study before being requested to participate. The questionnaires were distributed by trained research assistants who were knowledgeable about the content of the questionnaires to schools. Written consent forms were signed by each participant after familiarizing themselves about what the study entails before filling in the questionnaires.

d. **Teachers** (Objective 4)

Validated questionnaires were utilized for teachers who work in the public sector to determine their knowledge and practices in relation to child eye health in Swaziland (Appendix I). The questionnaires consisted of closed-ended questions. Participants were first informed about the purpose of the study before requested to participate and then asked to sign consent forms. The questionnaires were distributed by trained research assistants who were knowledgeable about the content of the questionnaires to schools. Written consent forms were signed by each participant after familiarizing themselves with what the study entailed, after which they completed the questionnaires.

e. **Stakeholders and Experts validation** (Objective 5)

Experts were conveniently selected to comment on the draft access framework. Stakeholders and experts input and comments were incorporated in the document sent out for expert review. This was done repeatedly (Delphi method) until consensus was reached about the notes of the framework developed.

4.8 Data analysis

The data analysis is presented with respect to the type of data, this being quantitative (descriptive and statistical analysis) and qualitative (thematic analysis), as well as content analysis for the documents from the neighbouring countries.

Phase 1: Data Collection

The following methods of analysis were used to analyse the data that was collected, content analysis, interviews and questionnaires.

Content analysis (Objective 1)

Wan (1995) and Glendinning (2003) defined policy as a definite selected activity chosen among alternatives to guide organisation, governments, institutions and usually determines present and future decisions. Reference documents assist with philosophy identification that underlines health policy documents and determine if these documents are in line with national constitution of the respective countries. It is also important to identify recipients of interventions, service provision and health system levels. Furthermore, eye health needs assessment includes the analysis of the impact of health resources, prevalence of eye diseases, community wellbeing and whether health priorities are restricted or spread all over the population at large. Eye health plans from two neighboring countries were reviewed; South Africa, a middle-income country and Mozambique, a third world income country.

The document review was carried out in the following three stages:

Stage 1: Identification of reference documents

Stage 2: Analysis of their contents

    i)   List the proposals made in each document

    ii)   State context in which eye health is expressed

    iii)   Identify the levels of care and where, in terms of level, each profession is found, which is usually determined by the health system, situation of human resources and who mostly benefit from the system

Stage 3: Comparison of the evidence based literature and relevant strategies.

An analysis of Swaziland's school health programme identified the various local and international legislative and policy documents in support of the school eye health programme, the documents being categorized as follows:

1. Legislative frameworks

2. Key heath policies and programmes

3. Key education policies and programmes

4. Social development policies and programmes

5. United Nations Convention on the Rights of a Child

Qualitative (thematic analysis) Objective 2

Qualitative data was obtained for the a) Health and Education officials interviews (Objective 2). Data analysis consisted of different stages such as categorizing, examining, recombining the evidence to address a study goal (Rabiee, 2004). Interview data was analyzed using thematic analysis and documented individually as case studies. The raw qualitative data was organized, collated, grouped and analysed thematically using interpretive content analysis (Patton, 2002). This refers to the adoption of research that replicates and uses valid inferences for making replicable and valid inferences from other meaningful matter to the contexts of their use during analysis (Patton, 2002).

Quantitative (descriptive statistics) Objective 4

The quantitative data was captured and analysed using the Statistical Package for Social Sciences (SPSS version 24) statistical package in consultation with a statistician. Findings are presented as descriptive statistics, tables and graphs. The statistical analysis included frequency counts, cross tabulations and Chi-square tests for correlations. Statistical significance was set at a 95% confidence interval and all P-values less than 0.05 were considered statistically significant.

Through the use of questionnaires (quantitative data), participant interviews (qualitative data), and a review of various documents, areas of convergence and divergence were discovered in the data, and shortcomings in the frameworks and models reviewed. The data from the various sources was triangulated to identify the gaps, barriers to child eye health and factors that will hamper successful eye health implementation and sustainability in Swaziland in order to develop an access framework.

Phase 2. Framework development

The **fit model** originally proposed by Penchansky (1977), the **barrier focused framework** by Penchansky and Thomas (1981) and later expanded into an **access framework** by Aday and Awe (1997) provided insight into developing the study framework. Attention was therefore focused on factors relating to patient satisfaction, provider practice patterns and service utilization derived from **Penchansky's elements of access** to determine the supply and demand of access to eye health care, as they are assumed to be influenced by access variations (MacKinney et al, 2014; Levesque et al, 2013 and Scheffler et al, 2015). Barriers to healthcare utilization by acknowledging individual socio-economic status, such as medical aid, income, source of care and placing particular emphasis on **access and health outcome** as how the two aspects relate to each other was taken into account (Slifkin, 2002; Davidson et al, 2004; Balabanova et al, 2007). The 'need' for care, 'predisposing' characteristics of an individual, and 'enabling' structural characteristics were also viewed as part of the core for conceptualizing the framework (Rickett and Goldsmith, 2005; Andersen et al, 2002). A Delphi technique was utilized and experts' input and comments were integrated into the draft access framework. This was done to accommodate the relevant Swaziland legal frameworks, taking account of the South African, Mozambican, regional as well as international models.

Stakeholders and experts: A draft framework was developed through a process of triangulation. To validate the developed framework, it was sent out and written comments were requested from experts in the field, these being incorporated into the final access framework (Objective 5)

4.9 Validity and reliability

4.9.1 Validity

In order to ensure internal validity, the study applied different forms of data analysis by using face validity to test questions and interview relevance (Bowling, 1997). The questions were clearly stated, understandable, unambiguous and focused on the relevance of the study to eliminate investigator effects as well as extraneous variables. All the interview questions for Directors for Health and Education, head of school health programmes in the respective ministries were prepared prior and derived directly from the interview questionnaire to ensure data collection was relevant to the purpose of the study. All the questionnaires were validated and modified to suit the

local conditions (Gilbert, 2008, Mafwiri and Gilbert, 2010; Borrel et al, 2013; Mashige et al, 2016). The questionnaires were pilot tested on respondents that were not included in the main study sample and a statistician provided support with the use of appropriate data analysis techniques.

4.9.1 Reliability

Reliability was ensured through internal consistency consisting of questions and interviews classified as one category (Bowling, 1997). Error and bias were eliminated by ensuring that all questions requiring positive and negative responses were followed by reasons why a particular response was chosen. For consistency, all data entered were cross checked with field data and all errors identified were amended accordingly. All interviewed respondents were made aware of the nature of the study prior to being interviewed, hence interviews were standardized.

4.10 Ethical considerations

Several aspects that promote adherence to ethical norms include knowledge, accountability, moral or social values and confidentiality (Justice, 2008; Resnik, 2011). Ethics apply in any research conducted particularly when human subjects are involved.

- The proposal was approved by the Biomedical Research Committee of University of KwaZulu-Natal (BE338/13), the Swaziland Health Ethics Committee (MH/599C) and the Ministry of Education.
- Participation in the study was voluntary, as stipulated in the consent form, and only those who completed the consent form were allowed to participate. Participants were first informed about the purpose of the study before being requested to take part.
- Consent documentation for teachers, parents, guardians, eye health professionals were provided in writing, while verbal consent was obtained from the Health and Education officials.
- None of the questions posed presented any psychological harm or emotional discomfort to the participants (Appendix C, D, E, H, I).
- Benefit to participants will include improved access and improved eye health services despite geographical location.
- No monetary or other inducements were given to the participants.
- All data captured was kept confidential and no subject was identified by name.

- The data will be stored in a locked cupboard for five years after which it will be shredded.

4.11 Dissemination of results

The results and recommendations of the study will be made available to all the relevant eye care stakeholders in Swaziland. This will be done through presentations at professional conferences and by articles in peer-reviewed South African Post-Secondary Education (SAPSE)-accredited journals. Seminars and workshops will be utilised as feedback mechanism to participants.

4.12 Conclusion

The methodology selected for this study was considered suitable to establish the opinions of the various stakeholders who had both knowledge and experience relating to children's access to eye care services in Swaziland. As the document is intended to have credibility in the health and education environments, it was considered important to include stakeholders in both, and to additionally canvass the opinions of parents who have to ensure that their children are able to move through the systems indicated in the guidelines. In a resource constrained setting such as Swaziland, it is important that the guidelines take into account the real challenges and obstacles that visually impaired children face in seeking eye care, with the final input from the expert panel ensuring that the document provides the professional input to ensure that they received the best services possible.

CHAPTER 5. RESULTS

5.1 Introduction

This chapter describes the results of the data obtained in the study, and is presented with respect to Objectives 1–4 of Phase 1. The results include policy review, description of responses from interviews with officials in Health and Education Ministries, clinical facility assessment questionnaires for HODs of eye clinics as well as questionnaires completed by parents, teachers and eye health professionals.

5.2 Objective 1. To undertake a desktop review of eye care policies in two neighboring countries with specific relation to child eye care

Relevant general eye policies and child eye health documents were identified and obtained electronically from the respective national health departments/ministries websites. The selected documents represent the general and child eye health policies in the respective countries.

5.2.1 Health policy review

General eye health and specific child eye health policies for Mozambique, South Africa and Swaziland were reviewed. In the following section, South Africa and Mozambique's eye policies/guidelines are presented in order to highlight strategies implemented towards improving access to eye care services by children. However, as a new eye health care policy for Mozambique has not been developed and implemented, the National Ophthalmology Plan for 2007-2010, and their Country Strategy 2012-2015 for Eye Health Care documents were reviewed. A literature search revealed that there is no policy on general eye health and/or child eye health in Swaziland, therefore the health and the school health policies were reviewed.

5.2.1.1 Results of the review of eye health care in South Africa

South Africa has put in place measures to ensure optimal access to eye and general health for all children by becoming a signatory to the United Nations Convention on the Rights of the Child, as well as through the special recognition in the Bill of Rights of the South African Constitution

(Integrated school health policy, 2010). The Health Professions Council of South Africa further provides specific guidelines for children, thereby ensuing practitioner's compliance with health care standards. Legislation in support of the rights of children consists of:

- The Constitution of South Africa (Act No.108 of 1996)
- The Children's Act (Act No.38 of 2005) as amended
- The South African Schools Act (Act No. 84 of 1999)

In South Africa, visual disability is reported to be the leading impairment (1.3%), with childhood blindness estimated to be 0.47 per 1000 children (NDOH, 2002). In line with the increasing burden of eye health issues, the National Guideline: Prevention of Blindness in South Africa, was adopted in 2002 under the Directorate of Chronic Diseases, Disability and Geriatrics (NDOH, 2002). The National objectives addressed by the South African guidelines are to:

- provide support to the Prevention of Blindness Programmes in the county's provinces and SADC countries

- coordinate the Prevention of Blindness Programmes in South Africa.

- uphold and secure the rights of those who are living with blindness.

- reduce blindness prevalence in South Africa from 0.75% to 0.50% by the year 2005.

In compliance with the National Guidelines, minimum objectives were developed for Provincial Prevention of Blindness Programmes, to which the Provincial bodies are allowed to add, these being:

- Providing immediate access to primary eye care in the PHC clinics and health care centres
- Providing referral access to secondary and tertiary eye care
- Reducing blindness prevalence from 0.75% to 0.50% by the year 2005

As recommendations were made in the national guideline document, four levels of prevention were deemed essential to ensure the effectiveness of the prevention of blindness programme namely:

- Primary prevention: consists of avoiding complications, disabilities and impairment from diseases. Safety promotion, child immunization, maternal and child health services as well as health promotion forms part of primary prevention.

- Secondary prevention: consists of early detection and intervention in order to receive appropriate and timeous treatment for diseases, injuries or any conditions to prevent the development of complications.

- Tertiary prevention: consists of measures to limit or reduce impairments or disabilities.

- Quaternary prevention: consists of measures to reduce the effect of untreatable diseases or disabilities.

The document further uses blindness prevalence statistics to determine human resource requirements at primary, secondary and tertiary levels in public sector, and recommends the following.

- Primary level: at least one nurse trained in primary eye care at every community centre.

- Secondary level: one optometrist per 250 000 population and one ophthalmic nurse per 100 000 population.

- Tertiary level: one ophthalmologist/ one ophthalmic medical officer per 1 million population

5.2.2.2 Results of the review of eye health in Mozambique

This section presents the results of the review of the Mozambican National Ophthalmology Plan for 2007-2010 and the Country's 2012- 2015 Strategy for eye health care. The results indicate that the government of Mozambique has adopted the United Nations Convention on the Rights of Children, however, there is no specific legislated policy on Eye Care. Legislation in support of the rights of children in Mozambique include the following:

- The Constitution of Mozambique (article 88 and 89 of 2007 (equal access to Education and Health, respectively)

- Law to Promote and Protection of the Rights of the Child (Law No. 7/2008 of July 9) (Mozambique, Country Strategy 2012 –2015)

LIGHT FOR THE WORLD, in partnership with government structures, has drafted a Mozambique Country Strategy 2012- 2015 for Eye Health Care in order to promote eye health, particularly in under-resourced areas. The NGO ensure:

- Access to affordable comprehensive eye care for all, including the visual impaired and blind in five of the 11 provinces of Mozambique
- Curbing the barriers to accessing high quality eye health care services
- The use of sustainable interventions to address the difficulties faced by those living with disabilities to participate fully in society by maximizing their skills, abilities and potential
- Promoting eye health and prevention of blindness as well as eliminating neglected tropical diseases

The National Ophthalmology Plan also focused on controlling the major causes of blindness and visual impairment. The strategies for the development of the activities were as follows:

- To expand the cataract programmes annually by 20%, with 80% using intra ocular lenses

- To develop trachoma eradication programmes and establish its prevalence through rapid assessment mapping

- To reduce visual impairment and blindness from glaucoma through capacity development for effective diagnosis and treatment

- To reduce avoidable childhood and blindness by 50%, and early detection of refractive error in school children covering the entire country through school screening, refractive examinations services and affordable spectacle provision

- To expand vitamin A deficiency prevention in children in collaboration with national nutrition programmes and education in communities

The document lists three levels of eye health care, which are as follows:

- Primary level: concerned with basic services of eye health promotion and early detection of eye diseases
- Secondary level: deals with intervention, such as providing glaucoma and cataract surgery
- Tertiary level: where the highest provision of eye care, training and research is conducted

5.2.2.3 Results of the review of the health care policy in Swaziland

This section presents the results of the review on the Swaziland National Heath Care Policy of 2006. The document outlines objectives that seek to ensure the provision of promotive, preventative, curative and rehabilitative services for all citizens, these include:

- Reducing morbidity, disability and mortality cause by diseases and social conditions
- Promoting the effective allocation and management of health and social welfare sector resources
- Reducing the risk and vulnerability of the country's population to social welfare problems as well as the impact thereof

The document further outlines the main thematic areas of focus from structural and legislative organs concerned with guiding and regulating the implementation and delivery of health services at national and regional levels. These include the following:

- Organization and Management of Services
- Coordination
- Human Resources
- Quality Assurance
- Health Financing
- Infrastructure Development and Equipment Management
- Service Provision: Public Health and Clinical Services

The policy implementation framework highlights four categories of the national strategic plan for adequate and sufficient operations for its success, which include:

- Implementation
- Funding
- Monitoring and Evaluation
- Policy Revision

5.2.2.4 Results of school health policy review in Swaziland

This policy document was drafted in line with the Education Policy (2011) that identified Schools as Centres of Care and Support (SCCS) or the Inqaba Model (siSwati word for fortress). The document contains objectives aimed at guiding the provision of comprehensive health services in public government schools, and include:

- Providing health services located within the PHC package in conformity with the Care and Support for Teaching and Learning (CSTL)
- Providing promotive and preventative health services addressing the health needs of children
- Achieving children's universal rights to access education by eliminating barriers to learning
- Advocate for a secure environment for teaching and learning through the involvement of parents, teachers, and communities

The legislative and policy framework in Swaziland

These legislative and policy frameworks are based on the following:

a. *Legislative framework*

Several Acts are relevant to the school health programme

- United Nations Convention on the Rights of a Child

- The Constitution of Swaziland, article 14(1) (f) and article 16(1) (f), revised

- Children Protection and Welfare Act, 2012 (Act no. 6 of 2012)

- Swaziland's Education Act (Act no. 9 of 1981)

b.   ***Key health policies and programmes***

- Swaziland Expanded Programme on Immunization (SEPI)

- National framework to stop new HIV infections among children

- National Children's Policy, 2009

c.   ***Key education policies and programmes***

Below are relevant legislative and policy documents geared to supporting access to education for all citizens in the country:

- Education for All Plan of Action, 2000

- National Poverty Reduction Strategy and Action Plan, 2006

- Swaziland National Children's Policy (2009)

- Free Primary Education Act, 2010 section 10 clause 1

- Education Sector policy (2011)

- National Plan of Action (NPA) for Children 2011-2015 (2010)

- Education and Training Sector Policy (EDSEC), 2011

- Schools as Centres of Care and Support (SCCS), 2010

d.   ***Social development policies and programmes***

- National Plan of Action for Children 2011-2015

- Social Development Strategic Plan 2011-2015

- Guidelines and Standards for Alternative Care, Strategy and Action on Violence Against Children

5.2.2.5 Policy review summary

These policies are formulated in line with the constitution and legislative laws that exist in the respective countries. The eye and general health policies advocate for better public health services, and are guided by formulated objectives with set targets. Emphasis is on the importance of referral protocols and eye health workforce required in each level. Hence the primary health level is deemed essential in promoting access to eye and general health services in the public sector. The main thematic areas of focus from structural and legislative organs concerned with guiding and regulating the implementation and delivery of eye and general health service are similar in the policy documents reviewed. However, there seem to be less specific focus to children's eye health or causes leading to visual disability or blindness.

5.3 Objective 2. To determine current levels and factors that impact on access to children from the perspective of health and education officials

The results presented are from key informants interviewed in the study, which consisted of the following officials: Firstly, The Director of Health services in Swaziland and the HOD of school health from the Ministry of Health. Both officials were interviewed with the same questions regarding their perspectives on government policies, current and future efforts in providing quality child eye health service. Secondly, The Director of Education and Training in Swaziland, and the HOD of school health from the Ministry of Education. The same questions were also used in the interviews regarding their perspective on educational policies, as well as current and future efforts in providing quality education. Three major themes emerged from both the Health and Education interviews, these being: level of access, structural barriers and knowledge barriers to child eye care services.

5.3.1 Interviews with health officials

Two officials from the Health Ministry were interviewed, from which the three themes emerged.

5.3.1.1 Level of access

In response to the questions on general health issues, the officials reported that there was currently no functional referral system in the country, but that a committee has been set up to create sustainable and effective linkages from primary to the highest level of care. However, they raised

concerns about patients presenting directly to tertiary facilities, skipping all the other levels, thus causing unnecessary congestion. Moreover, these patients sit outside the facilities and remain unattended to for lengthy periods of time, as a result of long queues and insufficient skilled personnel. The Director reiterated that it is wrong to turn patients away as well as to overload professionals with large numbers of patients, as this drops the standard of quality care.

Regarding the exclusion of eye health professionals in the National Health Policy document, the Director indicated that "*Many other professions have not been mentioned in the health policy document and have lodged the same complaints about their exclusion*". However, the Director acknowledged the mistake and further reiterated that the policy document does not need to include every profession without stating reasons, but that it did have its shortcomings. Regarding strategies being implemented to strengthen the public health sector in order to improve eye health in the country, the Director indicated that it is not the case that eye health is not prioritized compared to other disciples in the health sector. However, the country is still behind in terms of providing eye care services to its citizens. Table 5.1 shows the deployment of eye health professional in the public sector and mission clinics in Swaziland, as indicated by the Director of health services.

Table 5.1: Deployment patterns of eye health professionals per region

Eye professionals	**Regions**				
	Hhohho	Manzini	Shiselweni	Lubombo	Total
Ophthalmologist	1	none	none	none	1
Cataract surgeon	none	none	none	1	1
Optometrist	3	1	1	none	5
Ophthalmic Nurse	6	1	1	5	13

The Director reported that he was not sure about the deficit in terms of the required numbers to provide adequate service delivery. He also highlighted the need for a coordinator to serve as a focal point to address eye health issues, but acknowledged that ideally, evaluations to determine the eye workforce have to be done annually, as is done in the other disciplines. The director suggested that the Ministry was trying to resolve eye health human resource challenges by recruiting foreign nurses from other SADC countries. Both officials reported that most of the

countries did not have enough relevant workforce in eye health, and that countries in the SADC region raised concern about health professionals leaving for greener pastures.

The officials reported that the school health programme continues to experience a shortage of human resources. Although in some areas there has been a slight improvement, the ratio is not enough for appropriate job allocations due to budget constraints. In addition, due to the absence of a functional referral system, school health is faced with the same problem. For children who are excluded by the school health programme, the officials reported that the government has introduced an informal education syllabus with the assistance of the Education Ministry. The head of school health indicated that there were only two nurses in the entire country to attend to referred children. She further reported that teachers were tasked with the responsibility of informing parents about children who needed further assessments following screening in schools. The other challenge reported was the poor adherence to follow-up appointments, even in cases where transport is available. Parents who have children screened for any sickness and were found to require further assessment are informed by their class teachers. Following discussions with class teachers, the parents are required to take their children to the referred hospitals for treatment. Those who are orphaned and vulnerable, or whose parents cannot afford to take them to hospital are at a disadvantage.

The closing remarks of the officials highlighted poor management, misuse of funds and unaccountability, which has contributed to the failing health system. Furthermore, managers are overwhelmed with duties and not given the necessary support to an extent that they fail to excel in their prescribed duties. *'The current health workforce is swamped with non-Swazi citizens as a result of an exodus of healthcare practitioners for greener pastures in other countries or private hospitals which has contributed immensely to the downfall of health system in the country'* said the Director. With regards to access to health services, he reported that many citizens had limited access to quality health care, as private access is costly to the average citizen. In addition, he reported that public hospitals also expect patients, including children, to pay a certain amount to receive appropriate treatment, which is a challenge, as the majority of the population lives below the poverty line.

5.3.1.2 Structural barriers

Regarding measures put in place to alleviate the health care service disparities between rural and urban areas, the Director reported that approximately 85% of Swazis live 8 km away from a health facility, making access difficult. In addition, the school health programmes exist in public and mission schools under the Ministry, which are found across Swaziland. The officials reported that the Ministry was collaborating with the Christian Blind Mission (CBM) to evaluate and monitor ophthalmic services. They further stated that nurses were being recruited from other disciplines and awarded bursaries to enroll for the ophthalmic nursing course in Malawi. The Director highlighted that the shortage of finances to educate more nurses was the main obstacle in resolving some of the serious issues concerning the lack of human resources in eye health care, which was due to the economic crisis in Swaziland. In addition, they stated that searching for sponsors was very difficult, as most companies were working on tight budgets. They reported that only four nurses were sent to study at a time before others were recruited to go for enrollment. Another important issue raised by the Director was that the ophthalmic nurses were lost in the system, as some were promoted to other positions within the sector while they are a priority in eye health.

The main challenge reported by the officials was finding eye specialists to come and work in the country. Officials reported that this was in part due to high competition amongst countries in the sub-Saharan region and better incentives offered by neighbouring countries. Furthermore, shortage of equipment, drugs and pharmaceutical supplies were reported to be some of the contributing factors to poor eye health service delivery. The officials suggested that effective strategies to improve eye health care were hindered by the resignation of the eye health coordinator responsible for initiating ophthalmic outreach programmes. Despite the cessation of programmes that dealt with eye health and Swaziland's poor economic growth, officials reported that some equipment has been bought and distributed among the hospitals' eye clinics.

"*The process of setting up eye clinics has been very slow following the economic recession as some of the equipment to be purchased is expensive such that even those that are up and running still lack essential equipment*" said the Director. The head of school health also acknowledged that there was lack of progress in setting up new clinics, as they were struggling with transport for children requiring further assessment. "*We are forced to refer children from one region to the*

other just because some of the regions do not have even a single clinic rendering ophthalmic services", said the school health HOD.

5.3.1.3 Knowledge barriers

Some of the knowledge barriers are influenced or related to socio-cultural behaviour, which may have swayed the key informants' responses. Officials lamented the lack of campaigns to create awareness about the roles of eye care professionals, a function that has been delegated to eye health coordinators. The head of school health reported that "*I did not know what an optometrist is and what the role of an optometrist is. I only knew after the eye health coordinator was employed and assisted in school screening in 2010, yet I have been head of this department for many years*".

The officials acknowledged that they have not initiated any programmes or projects on awareness about childhood blinding diseases in schools. The head of school health raised an interesting point that '*when you use media such as radio to make people aware of services offered by government such as eye services, hospitals become congested and some patients are turned away due to insufficient staff*'.

"*The health promotion aspect has been ignored for some time as the majority of the Swazi people are already sick, therefore require curative services the most*" said the Director. Reasons given for disregarding health promotion by the Director were: poor policy formulation that ignores critical issues on preventative services, and a health policy that excluded national priority goals and set targets. In addition, when the policy document was drafted, HIV and other infectious diseases were not accounted for, which has put more strain on the struggling health economy. The Director also reported that the health policy document seems to be outdated and no amendments have been made to make it comprehensive and currently relevant to guide priory areas, such as ophthalmic services.

5.3.2 Interviews with education officials

Two official from the Education Ministry were interviewed, from which the three themes emerged.

5.3.2.1 Level of access

In response to the questions on challenges to accessing education, officials reported that there was a significant improvement in enrolment following the implementation of Free Primary Education (FPE) to benefit marginalised children. However, they indicated that the implementation goal has not been completely achieved due to the economic crisis. The officials lamented that besides the school health policy document putting an emphasis on access to quality health services for all children, it also focuses on three key elements, which are: prediction, prevention and preparedness. However, its implementation depends on the available health facilities provided by the school, such as first aid kit, health checks and awareness. Furthermore, some schools did not follow the enrolment mandate of ensuring that children have completed their immunization schedule, irrespective of their grades.

"*The school health programme existed since 1976, however, it has experienced quite a number of challenges, particularly funding and human resources. Amendments to the old document have been made and adopted in 2011 as the officials in Health and Education Ministries felt that it was poorly drafted therefore excluded critical aspects of school heal*th", stated the HOD of school health.   The current school health system comprises of seven pillars, namely: *Protection and safety, Psychosocial support, Food security, Health Water, Sanitation and Hygiene HIV and AIDS, Gender and Life skills, Quality teaching and learning*. However, the officials reported that implementation is slow due to the shortage of skilled personnel to train and conduct workshops for teachers about the concepts compiled in the document deployed by the Health Ministry, as hospitals are flooded with patients in need of general and ophthalmic services. "*It is quite difficult to implement the programme as planned from the current situation*". "*Options to be considered is to employ people whose job descriptions will be to implement the programme with the assistance of guidance officers*" said the school head.

School dropout rates, as reported by the officials, was higher in the sixth grade, with various factors hindering access to education. These factors included poor socioeconomic status of parents, ill

health or parents or guardian/caregiver due to HIV and AIDS, natural disasters, long distance to travel, child trafficking, child labour and pregnancy. '*Children who start schooling late do not cope with attending school with their younger counterparts, therefore decide to stop attending school*' said the Director. The most critical point emphasized was illnesses related to HIV/AIDS that required costly medications. "*The main health issue affecting dropouts ranges from various diseases in the different regions. In most instances, the dropouts live with HIV from child abuse, other long-term illnesses and gender vulnerabilities*" stated the Director. "*Having mentioned the above, it is easy to say that we should prioritise these issues, but in reality, we have experienced difficulties on the implementation phase as these involve other stakeholders*". The Director was not sure about the extent of problems caused by child eye health issues and its consequences. However, she acknowledged that it should be a priority, as children use their visual sense most often at school.

The head of school health pointed out that as the situation of HIV related diseases is not contained, it will be difficult to address some of the issues contributing to poor school attendance. Moreover, as the country was experiencing an economic crisis, all the programmes initiated will cease to exist, which impacts on individuals who were benefiting from them. The officials reported that principals were left in isolation, as they no longer get the necessary support from the Health Ministry, who were currently facing challenges related to transport issues that affected their ability to continue with screenings. '*School screening initiated by the Ministry of Health for identifying children with visual deficits both in communities served as critical components to assist the Education Ministry. However, shortcomings such as managing follow up and analysing data from the Education Ministry was disastrous to the programme to an extent that sponsors withdrew because of the failure to produce progress statistics*' said the school head.

The Director indicated that it was pointless to screen children for a number of diseases, including ocular disorders, only to be denied access to appropriate health services because they are required to pay for the health services. Most of these children who required these services were from poor backgrounds and were denied access due to a lack of clinics near the poorly resourced schools. The head of school health also stated that when visiting rural schools, very few have clinics close

by, and if available, they have been closed down or are of little assistance to the community, lacking human resource and working equipment.

5.3.2.2 Structural barriers

The school health HOD indicated that the school health programme guide has a self-assessment tool that schools had to use to gauge its progress. The results of the assessment were then presented to the Ministry and discussed among school principals to initiate proper development plans. With regards to eye health, the officials reported that there was nothing specific regarding children with visual problems, however, they highlighted issues of health and infrastructure to enable children with other disabilities to move around, particularly those using wheel chairs. The officials reported that the Ministry of Education has involved communities and other stakeholders to ensure that all children access education, irrespective of their visual status. Furthermore, the introduction of FPE has improved school enrolment, because in most instances, disabled children are from poor backgrounds.

The officials acknowledged that the issue of visually impaired and blind children has been ignored for some time, and that those enrolling in the school for the blind did not have enough study materials, such as braille. In addition, limited spaces, scarcity of trained teachers, absence of a proper functioning health system for the visually impaired children were neglected, hence parents did not enrol their children and preferred to keep them at home. The system therefore concentrates on other aspects of school health and ignores eye health issues.

5.3.2.3 Knowledge barriers

A role of the Ministry of Education is to encourage active involvement of all stakeholders in the proper development of schools, to provide information regarding health and awareness in schools as well as training and consultation. Furthermore, promoting the involvement of children to participate in health club activities were being guided by trained teachers and other stakeholders.

The officials reported that the Ministry of Education utilized radio messages to reach parents, learners and communities to participate and collaborate for better schools and communities. In these radio briefings, the Ministry highlights important issues affecting children when at school,

and indicates what strategies can be developed to improve the current status of education in the country as whole. Radio was the preferred mode of communication after surveys found that most people, particularly those from economically disadvantaged communities, had access to a radio.

The officials reported that the school for the blind was responsible for raising public awareness about visual impairment. This was done by promoting a realistic understanding of the problems facing the blind amongst the sighted community, identifying blind children in communities and referring them for comprehensive assessment by optometrists. This in turn formed the links between the medical professionals, education advisory bodies, social services and other concerned or interested parties.

5.4 Objective 3. To determine the availability of eye care facilities and services for children.
There were five facilities reported to be offering eye health services in the country, three being government hospitals, one mission hospital and the other a mission clinic. All the hospitals with existing eye clinics were included in the clinical facility assessment. Table 5.2 below shows the names of the hospitals, area where they are located, as well as the human and other resources available. Few children presented to the public sector eye care facilities available in the country, which lacked human resource, working equipment, sound infrastructure and essential drugs for patient management. Low vision and contacts lens fitting services were lacking, and only two clinics conducted outreach programmes at schools.

Table 5.2: Clinical Facility Assessment Questionnaire

Indicators assessed	Facilities assessed				
Region	Hhohho	Hhohho	Shiselweni	Lubombo	Manzini
Facility name	Mbabane Government Hospital (Regional and Referral Hospital)	Piggs Peak Government Hospital	Hlathikhulu Government Hospital	The Good Shepherd Hospital (regional with 20 attached clinics)	Ekululameni Training and Optical Centre
Facility location	Urban	Rural	Rural	Rural	Rural
Facility ownership	Government	Government	Government	Mission	Mission
Population served	331 734 or more	360 228	241 365	250 000 or more	360 228
Available Human resource	• 1 ophthalmologist • 3 optometrists • 6 ophthalmic nurses • 6 non-clinical support	• 1 optometrist • 1 ophthalmic nurse	• 1 optometrist • 1 ophthalmic nurse	• 1 cataract surgeon • 5 ophthalmic nurses • Volunteers number varies for non-clinical support staff	• 1 optometrist • 1 ophthalmic nurse • 4 non-clinical support staff
Facility structure	• Inpatient ward has 22 beds with no specification for children or adults	• No inpatient ward at this unit	• No inpatient ward at this unit	• Inpatient ward has 25 beds; 10 females, 10 males, 5 children	• No inpatient ward at this unit
General daily duties	• 60 adults and an average of 10 children seen each day • Patients present with RE, external eye disease and congenital cataract • Ward rounds are conducted once daily • Conducts almost all types of anterior segment and posterior segment surgery except for vitreous, retinal detachment • Patients referred to RSA • Each day an average of 3 patients are admitted and 4 discharges made including children • Average length of stay in hospital before surgery is 1 day, and 2 days after surgery	• 15 adults and an average of 5 children seen each day • Patients' present with RE, external eye disease, uveitis, ocular trauma, macular degeneration and congenital cataract. • No eye surgeries performed at this unit • Cases requiring attention of an ophthalmologist are referred to Mbabane government hospital	• Approximately 35 adults and an average of 5 children seen each day • Patients present with RE, external eye disease, diabetic retinopathy, glaucoma, cataract	• 45 to 50 adults and an average of 5 children seen each day • Patients present with RE, external eye disease, cataract, glaucoma, diabetic retinopathy, hypertensive retinopathy and strabismus • Number of operations done per day not specified, depends on availability of cataract surgeon • Ward rounds conducted once daily • Conducts only minor anterior segment surgeries: cataract, conjunctival mass, foreign body removal & suturing • Patient's posterior segment surgery and complicated cases are referred to the Mbabane government hospital & RSA • Average length of stay in hospital before surgery is 1 or 2 days after surgery	• 15 adults and an average of 5 children seen each day • Patients referred to Mbabane government hospital and Good shepherd hospital • No surgeries are performed at this unit • Patients present with RE, external eye disease

				• Facility targets operating approximately 1 200 patients and treating 16 000 patients each year	
Statistics	• Eye clinic staff analyses data • Ministry does not assist the eye clinic department with information for planning and resource allocation • Clinic staff required to generate periodic reports • Facility does not display any information for patients to view	• Ministry analyses the eye clinic data and provides no feedback • Ministry does not assist the eye clinic department with usable information for planning and resource allocation • Clinic staff is required to generate periodic reports • Facility does not display any information for patients to view	• Ministry analyses the eye clinic data and provides no feedback • Ministry does not assist in any department with usable information for planning and resource allocation, clinic staff required to generate periodic reports every six months • Facility does not display any information for patients to view	• Eye clinic staff analyses data, results available in publications • Ministry does not assist eye clinic department with information for planning and resource allocation • Clinic staff required to generate periodic reports • Facility does not display any information for patients to see	• No data analysis done at this unit • Ministry does not assist the department with usable information for planning and resource allocation • Facility does not display any information for patients to view
Available services	• Low vision services offered and devices available • Contact lens fitting not done, no glucose and BP testing is performed during eye general examination • No pediatric ophthalmologist or pediatric optometrist	• No low vision and contact lens services • Glucose and BP testing done during general eye examination • No pediatric ophthalmologist or pediatric optometrist	• Low vision services offered but no devices available • No contact lens services • Glucose and BP testing done during general eye examination • No pediatric ophthalmologist or pediatric optometrist	• No low vision and contact lens services • Glucose and BP testing during general eye examination • No pediatric ophthalmologist or pediatric optometrist	• No low vision and contact lens services • Glucose and BP testing done during general eye examination • No pediatric optometrist or ophthalmologist
Clinical duties	• Optometrists perform refractions & prescribe glasses • Ophthalmologist & ophthalmic nurses attend to pathology & prescribe medication • Provide tertiary eye services for children • No outreach programmes	• Optometrist perform refractions & prescribe glasses • Ophthalmic nurse attends to pathology and prescribe medication where necessary • No tertiary eye services for children • Conduct outreach to surrounding schools	• Optometrist perform refractions & prescribe glasses • Ophthalmic nurse attends to pathology & prescribe medication where necessary • No tertiary eye services for children • Conduct outreach to surrounding schools	• Ophthalmic nurses and cataract surgeon attend to pathology and prescribe medication when necessary • No tertiary eye services for children • Conduct outreach at PHC Clinics	• Optometrist conduct refractions and prescribe glasses & ophthalmic nurse and drugs when necessary • No tertiary eye services for children • No outreach programmes
Available Equipment	• Snellen visual acuity charts, Projector, Occluder, Pupilarry distance ruler, Trial frame, Trial case, Phoropter, Retinoscope, Ophthalmoscope, Slit lamp, Keratometer, Tonometer, Autorefractor, Amsler grid • Equipment in good condition	• Snellen visual acuity charts, Occluder, Pupilarry distance ruler, Trial frame, Trial case, Retinoscope, Ophthalmoscope, Slit lamp • Equipment in good condition	• Snellen visual acuity charts Occluder, Pupilarry distance ruler, Trial frame, Trial case, Retinoscope, Ophthalmoscope, Slit lamp • dilapidated equipment	• Snellen visual acuity charts, Occluder, Penlight, Slit lamp • Equipment in good condition	• Snellen visual acuity charts, Occluder, Pupilarry distance ruler, Penlight, Trial frame, Trial case, Phoropter, Retinoscope, Ophthalmoscope, Tonometer • dilapidated equipment
Administrative Procedures	• Clerk is responsible for filling in the register	• Both nurse and optometrist are responsible for filling in register	• Both nurse and optometrist responsible for filling in register	• Clerks, volunteers and ophthalmic nurse are responsible for filling in the register	• Clerk responsible for filling in the register

	• Record cards stored in filing cabinets • Register is always available and kept in the eye clinic	• Record cards stored in filing cabinets • Register is always available and submitted to the manager	• Record cards stored in filing cabinets • Register usually runs out & replaced in a day or 2	• Register is always available and kept in the eye clinic	• Record cards stored in filing cabinets • Register always available and kept in the eye clinic
Utilities	• The facility has running water, electricity and a computer	• The facility has running water & electricity, but no computer	• The facility has running water & electricity, but no computer	• The facility has running water, electricity and a computer	• The facility has running water, electricity & a computer
Difficulties encountered	• Shortage of drugs and pharmaceutical supplies • Lack of hot water for admitted patients • Mixed unit shared by females, males and children • Poor recognition of eye health services in the deployment pattern of the nursing staff • Delays in responding to complaints • Lack of space to keep fragile equipment and conduct minor eye surgeries • Filing system is outdated leads to misplacement of cards • Absence of eye care service coordinator • Long duration taken to fix broken equipment	• Shortage of drugs and pharmaceutical supplies • Shortage of working equipment • The non-provision of reports, resolutions taken in meetings and no workshops conducted leading to clinics working in isolation • No sharing of information on new cases observed and management • Eye clinic staff attends medical briefing which is less relevant to the eye clinic staff • Long duration taken to fix broken equipment	• Lack of working equipment, drugs and pharmaceutical supplies • Some of the drugs have been out of stock for quite some time • Sometimes diagnose patients with naked eyes due to dilapidated equipment • More administrative work for optometrist and nurse leading to short consultation • Manager has no knowledge and understanding of eye health therefore fails to address the issues raised by the eye clinic staff at all • Long duration taken to fix broken equipment	• The shortage of space to keep fragile equipment and conduct minor eye surgeries • Human resource is lacking • Cataract surgeon is only available for a day each week • The lack of infrastructure as visual acuities are taken in the veranda in inappropriate lighting conditions • Shortage of drugs and pharmaceutical supplies or late deliveries of drug stock • Access cataract surgery depends on sponsors • Long duration taken to fix broken equipment	• Shortage of working equipment • Lack of human resource • Lack of funds to support the clinic is a major concern • Long duration taken to fix broken equipment

5.5 Objective 4. To determine parents, teachers' and eye care professionals' knowledge and practices about child eye health care

This section outlines each of the three groups of participants' demographic details, followed by their knowledge and practices regarding child eye health care.

5.5.1 Demographic characteristics of parents

A total of 173 questionnaires were completed by parents of children attending government schools in the Hhohho and Lubombo regions. Of those who completed the questionnaires, 117 (67.6%) were females and 56 (32.4%) were males. Ninety three (53.8%) parents reported having acquired a tertiary qualification, 65 (37.6%) had obtained between Grades 6 and 12, 11 (6.4%) went up to Grade 6 and four (2.3%) reported that they have never attended school. Fifty four parents (31.2%) were civil servants, and the occupations of other parents are shown in Figure 5.1.
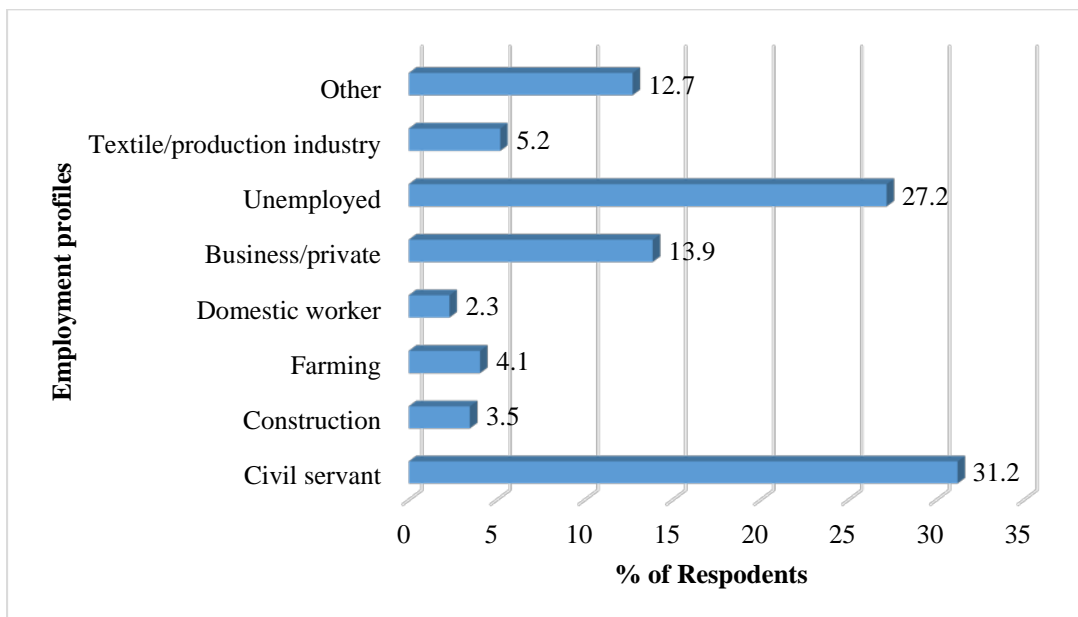
Figure 5.1: Parents' employment profiles

One hundred and fourteen (65.9%) indicated that they had no immediate family members who wore spectacles and 59 (34.1%) did. Sixty parents (34.9%) indicated that they took more than an hour to get to the nearest health facility, 52 (30.1%) took 31 to 60 minutes, 41 (23.7%) took 16 to 30 minutes and 20 (11.6%) took 0 to 15 minutes. The time taken to the nearest facility was

significantly associated with occupation of parents (p=0.037) but insignificant compared to their level of education (p=0.403). Furthermore, the time taken influenced the type of facility utilized by parents for their children's eye examination (p=0.018). Sixty three (36.4%) parents reported using the bus, 50 (28.9%) used mini buses/taxis, 37 (21.4%) used private transport and 23 (13.3%) walked to the health facility. Respondents who indicated using buses, mini buses/taxis as well those who walked, were more like to utilize public eye care facilities (p=0.004). The most common type of social media used by parents was WhatsApp (50.3%). Other responses regarding the use of social media are shown in Figure 5.2.
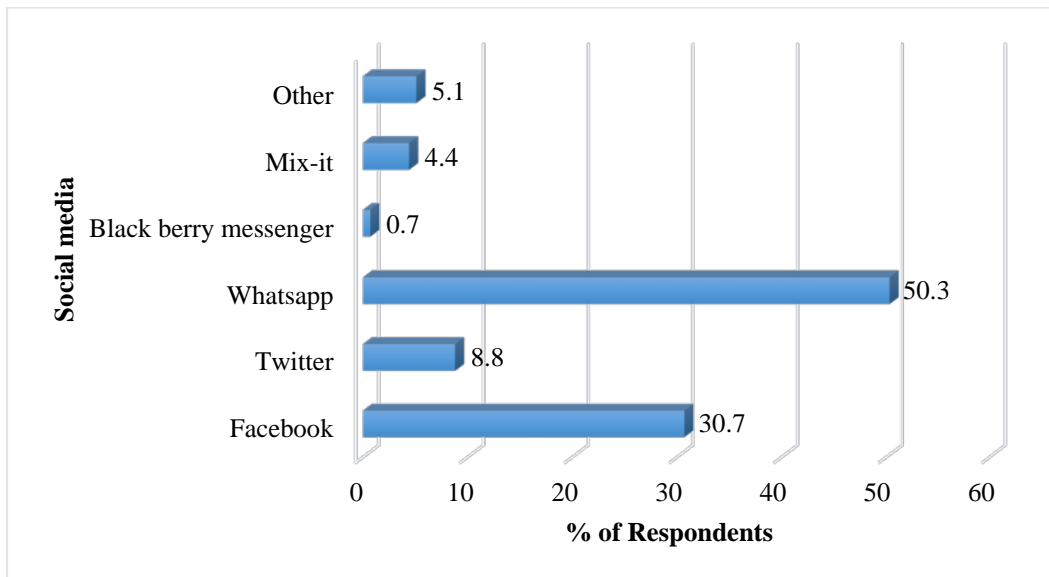
Figure 5.2. Parents who reported access to social media

Fifty four parents (27%) reported that general health screenings were conducted in their communities and twenty six (13%) reported that eye health materials were distributed in their areas. Other reported health programmes are shown in Figure 5.3.
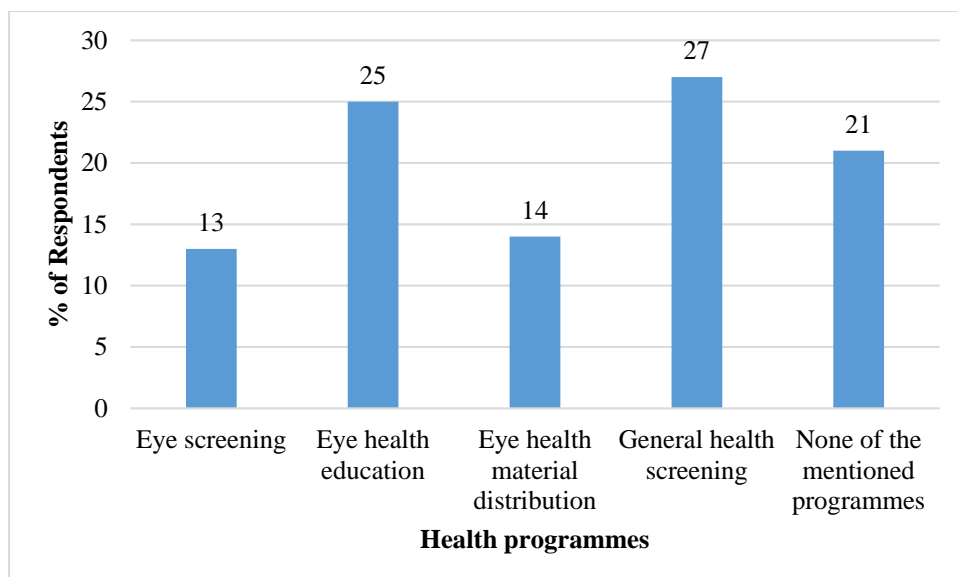
Figure 5.3: Parents who reported health programmes in their home area

5.5.2 Parents' knowledge about eye care

One hundred and four (60.1%) parents reported that they have never taken their children for an eye test, while other responses regarding child eye care are illustrated in Table 5.3.

Table 5.3: Parents responses about their knowledge of eye care

Since your child/children was/were born, have you ever taken him/her/them for an eye test?	Yes n (%)	No n (%)
	69 (39.9%)	104 (60.1%)
If yes, was it before school?	24 (34.8%)	45 (65.2%)
If not, what were the reasons?		
Did not know my child has to be tested	-	30 (28.9%)
Did not see the need	-	19 (18.3%)
Child was seeing well	-	33 (31.7%)
Financial constraints	-	8 (7.7%)
No eye care facilities available	-	6 (5.8%)
Only old people experience eye problems	-	8 (7.7%)

The level of education was not significantly associated with having an eye test (p=0.472), before schooling (p=0.302) or the reasons for not taking child for eye testing (p=0.067). Forty (58%) parents reported that they took their children for the first time for vision testing when they were 10 years and older, 12 (17.4%) reported that they took them when they were 6 years old, 12 (17.4%) reported 6 months old and 5 (7.3%) reported taking their children when they were 3 years

old. The age at which the child was taken for an eye test was insignificantly associated with the level of education of the parents (p=0.161), however, having an immediate family member who wore spectacles influenced early testing (p=0.013). Rubbing eyes repeatedly and suspicion of visual problems were the main factors that prompted parents to take their children for eye testing. Other factors that prompted parents to take their children for eye testing are shown in Table 5.4.

Table 5.4: Parents responses regarding reasons for taking their children to see an eye care practitioner

What made you decide to take your child/children to see an eye care practitioner?	n (%)	If you observed something that prompted you to take your child to an eye care practitioner, what was it?	n (%)
Informed by teacher	7 (10.1%)	Child plays with toys at close range	3 (4.5%)
Advised over radio	2 (2.9%)	Rubbing eyes repeatedly	38 (56.7%)
Advised in newspaper	5 (7.3%)	Tilting the head to one side	-
Suspected vision problem	28 (40.6%)	Excessive clumsiness	2 (3%)
Child born with vision problem	-	Headache	15 (22.4%)
Doctor referred me	18 (26.1%)	Nausea or dizziness	1 (1.5%)
Nurse referred me	5 (7.3%)	Squinting of eyes	8 (11.9%)
Other	4 (5.8%)		

Thirteen parents (7.5%) reported having children who had to drop out of school because of poor vision. Having an immediate family member who wore spectacles increased the likelihood of a child being taken for eye testing (p=0.001), but was not significantly associated with being well informed about eye health (p=0.218). One hundred and twenty seven (73.4%) parents agreed that poor vision could affect their children's performance at school and 23 (13.3%) each disagreed or were unsure. One hundred and eleven (45.3%) parents reported that eye diseases were the cause of poor vision, 62 (25.3%) felt that watching television was the most common cause of poor vision (Figure 5.4).
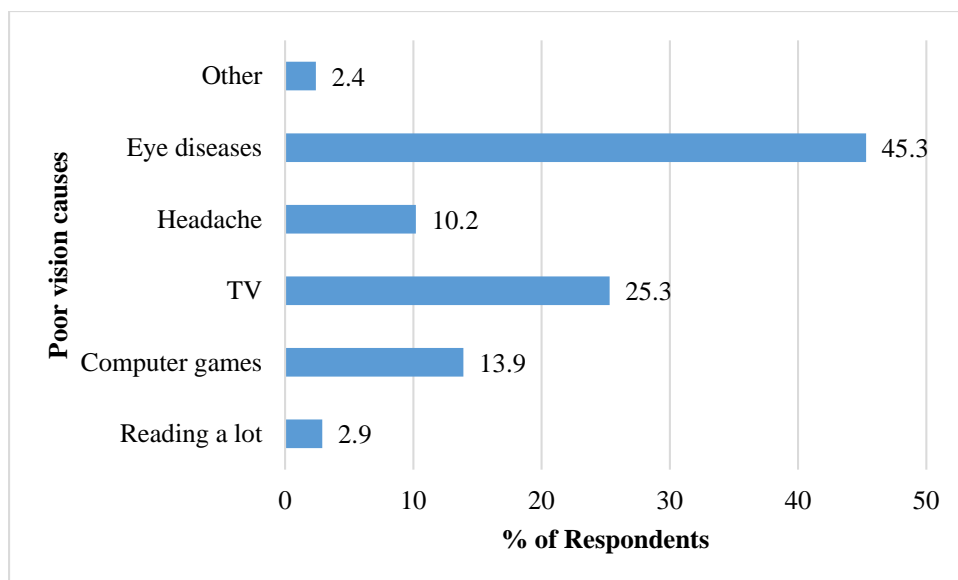
Figure 5.4: Parents responses regarding the causes of poor vision reported

Ninety seven (53.1%) parents indicated having no knowledge about child eye conditions, and no significant association was found between the level of education and knowledge of eye conditions affecting children (p=0.112). Of those who indicated being knowledgeable about child eye conditions, 44 (32.8%) reported that they knew about refractive errors and 37 (27.6%) reported that they knew of allergic conjunctivitis. Other responses regarding knowledge of eye conditions affecting children are illustrated in Table 5.5.

Table 5.5: Responses of parents regarding knowledge of eye conditions affecting children

Question/Item	Yes n (%)	No n (%)
Do you know of any eye diseases that affects children?	76 (43.9%)	97 (53.1%)
If Yes, which of the following eye diseases do you know?		-
Congenital cataract	16 (11.9%)	-
Trachoma	5 (3.7%)	
Allergic Conjunctivitis	37 (27.6%)	
Vitamin A deficiency	26 (19.4%)	
Refractive error (Short sighted and far sightedness)	44 (32.8%)	
None of the mentioned diseases	12 (4.5%)	

Forty two (31.3%) parents indicated that medical doctors provided them with information about eye diseases. Other responses regarding the source of information about eye care knowledge are shown in Figure 5.5.
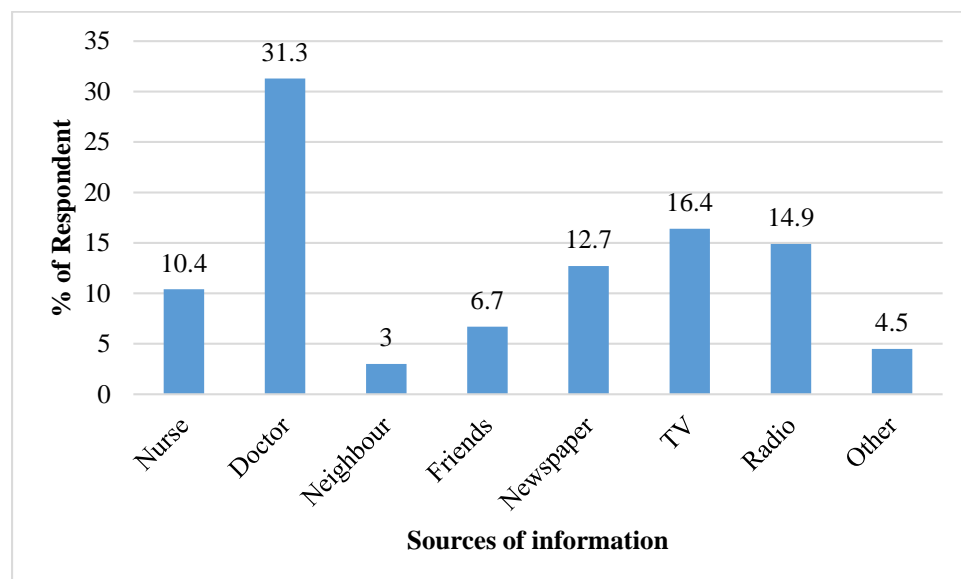
Figure 5.5: Parents responses regarding sources of information about eye conditions

Table 5.6 shows that 102 (59%) parents reported that they had never had any eye health professionals visit their area/community. Of those who reported that eye health professionals had visited their area, 19 (47.5%) and 10 (25%) indicated that the last visit by the eye health professionals was less than a year and between 2 to 4 years, respectively. Nineteen (43.2%) and 10 (22.5%) parents respectively reported that optometrists and allied health workers were part of these visits (Table 5.6).

Table 5.6: Responses of parents regarding official visits in communities by eye health professionals

Question/Item	Yes n (%)	No n (%)	Unsure n (%)
Have eye health officials ever visited your area?	39 (22.5%)	102 (59%)	32 (18.5%)
If Yes, when was the last time they visited?	-	-	-
Less than one year ago	19 (47.5%)	-	-
Greater than 1 year ago	7 (17.5%)	-	-
2-4 years ago	10 (25%)	-	-
More than 5 years ago	4 (10%)	-	-
Which of the following eye practitioners were present during the visit?			
Optometrist	19 (43.2%)		
Ophthalmic nurse	3 (6.8%)		
Ophthalmologist	3 (6.8%)		
Allied health workers	10 (22.7%)		
Never heard of any	9 (20.5%)		

One hundred and thirteen (65.3%) parents reported that they lived in an area that had a health clinic, 52 (30.1%) did not, and eight (4.6%) were unsure if there was a health clinic in the area they lived in. The knowledge of existing public facility was significantly associated with the level of education (p=0.006) of the respondents and where a child was taken to receive eye care (p=0.005). In addition, the last visit by eye health professionals was also found to be insignificantly associated with having a clinic facility in the area (p=0.100). Of those who reported that they had a clinic in their area, 56 (47.5%) indicated that the clinic did not offer eye care services, 42 (35.6%) reported that they were provided and 20 (16.9%) were unsure. The presence of a health facility in a community had an influence on early child eye examination (p=0.001). One hundred and three (59.5%) parents reported that they were not well informed about eye health, 40 (23.1%) felt that they were and 30 (17.3%) were unsure. Being knowledgeable about eye health was found to be insignificant when compared to the level of education of respondents (p=0.086) and early child eye examination (p=0.061) and eye health professionals' visits (p=0.070). Figure 5.6 shows that the majority of parents felt that mainstream media, which included radio, newspaper and television, was their preferred option to spread information about children's visual problems.
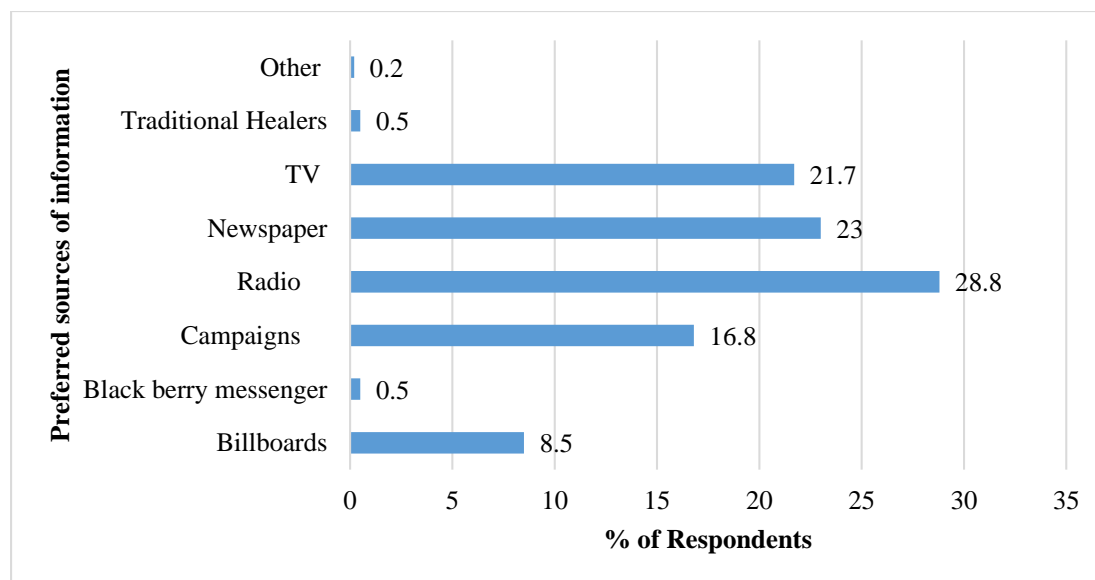
Figure 5.6: Response of parents regarding preferred sources of information

Eighty seven (50.3%) parents accepted the idea of their children wearing spectacles, 43 (24.8%) were either unsure or did not agree that children should wear spectacles. Educated parents reported that their children wore spectacles and were informed about the purpose of wearing them, however, no significant association was found between having spectacle and the purpose (p=0.834 and p=0.651 respectively). Seventy seven parents (44.5%) indicated that wearing glasses at an early age was not a consequence of poor vision, 60 (34.7%) were unsure and 36 (20.8%) agreed. In terms of equal access to educational opportunities for blind children, 58 (33.5%) parents strongly agreed with this notion, 52 (30.1%) agreed, 43 (24.9%) were unsure, 14 (8.1%) disagreed and 6 (3.5%) strongly disagreed. Other responses regarding eye care knowledge and education of visually impaired or blind children are shown in Table 5.7.

One hundred and thirty three (76.9%) parents indicated that none of their children were born blind or visually impaired, 20 (11.6%) each were unsure or agreed that their children were born blind or had a visual impairment. Of those who agreed, 19 (95%) reported that medical doctors explained the cause of blindness. Of the parents who indicated that their children were born or had gone blind, 16 (80%) of those had no knowledge of the onset of visual loss, two (10%) indicated that it was within the first year of life and another two (10%) reported it to have occurred when the children were aged 2 - 15 years.

Table 5.7: Response of parents regarding eye care knowledge and education of visually impaired or blind children

Question/Item	Yes n (%)	No n (%)	Unsure n (%)
In your immediate family are there any children who were born blind or visually impaired?	20 (11.6%)	133 (76.9%)	20 (11.6%)
If yes, was the cause of blindness or visual impairment explained to you by the doctors?	19 (95%)	1 (5%)	
Does the visually impaired/blind child/children attend school?	13 (65%)	7 (35%)	
If not, why?			
Do not know where to send child for schooling	-	1 (20%)	
Without seeing you cannot be educated	-	2 (40%)	
Scared that child will not cope	-	2 (40%)	
Child will be teased by peers	-	-	
Other	-	-	
Do you know any school for the blind and visually impaired in the country?	121 (69.9%)	30.1%. (n=52)	

5.5.3 Parents' practices about eye care

Thirty four parents (49.3%) reported that their children were dispensed eye drops when they visited the eye clinic and 31 (44.9%) reported that they were given spectacles. Two (2.9%) parents reported that no action was taken when they visited a health facility and two (2.9%) reported that they were referred. Twenty four (34.9%) took their children to private optometrists, 23 (33.3%) to public hospitals and 22 (31.9%) to public clinics. Parents who took their children to private optometrists indicated being well informed about eye health compared to those who took their children to public facilities, and this association was found to be statistically significant (p=0.049). One hundred and thirty two (76.3%) parents reported that their children did not wear glasses. There was no significant difference found between parents who agreed to their children wearing spectacles (p=0.118) or undergo surgery (p=0.454) and those who did not, compared to those who indicated being well informed about eye health. Of those who reported that their children wore glasses, 30(73.2%) knew what they were for. Table 5.8 shows the other responses regarding practices about eye care.

Table 5.8: Responses by parents regarding practices about eye care

Question/Item	Yes n (%)	No n (%)	Unsure n (%)
Do any of your children wear glasses?	41 (23.7%)	132 (76.3%)	
If Yes, do you know what they are for?	30 (73.2%)	-	11 (26.8%)
Will you have a problem if your child/children had to wear glasses?	31 (17.9%)	131 (75.7%)	11 (6.4%)
Would you allow your child to undergo eye surgery?	81 (46.8%)	57 (33%)	35 (20.2%)
If not, why?			
Fear of outcome	-	19 (31.7%)	
Damage eye more	-	20 (31.3%)	
Cost of the actual operation	-	12 (18.8%)	
Knowledge of services	-	10 (15.6%)	
Cultural and social barriers	-	2 (3.1%)	
Accessibility to services		1 (1.6%)	

5.6 Demographic characteristics of teachers

A total of 243 questionnaires were completed and returned by teachers working at primary and secondary government schools in the Hhohho and Lubombo Regions of Swaziland, of whom 144 (59.3%) were females and 99 (40.7%) were males. Two hundred and thirty five (96.7%) were Blacks and the rest were Whites and Coloureds. One hundred and twenty five (51.4%) teachers reported that their immediate relatives wore spectacles, 107 (44.2%) reported that their immediate relatives did not, 11 (4.4%) were unsure. More teachers without a family member wearing spectacles were more likely to be informed about eye health compared to those who have (p=0.001). Thirty three (13.6%) teachers indicated that there were children in their immediate families who were born or went blind, 203 (83.5%) reported to the contrary and seven (2.9%) were unsure. Ninety six (39.5%) teachers reported that they took 16 to 30 minutes to get to nearest facility offering ophthalmic services, 53 (21.8%) took more than an hour, 49 (20.2%) took 31 to 60 minutes, while 45 (18.5%) took 15 minutes. Ninety six (39.5%) teachers used private cars to get to the nearest eye clinic, 66 (27.2%) used mini buses/taxis, 43 (17.7%) used buses, 36 (14.8%) walked and 2 (0.8%) used other modes of transport, such as trains.

One hundred and eighty (44.3%) teachers reported having access to WhatsApp, 135 (33.3%) to Facebook and 8 (2%) to Blackberry messenger. Other responses regarding access to social media are shown in Figure 5.7. Two hundred and two (33.5%) indicated that they had access to main

stream media, such as television (TV). Similarly, 202 (33.5%) reported having access to radio, 198 (31.3%) had access to newspapers and 10 (1.7%) had access to other media, such as internet and skype.
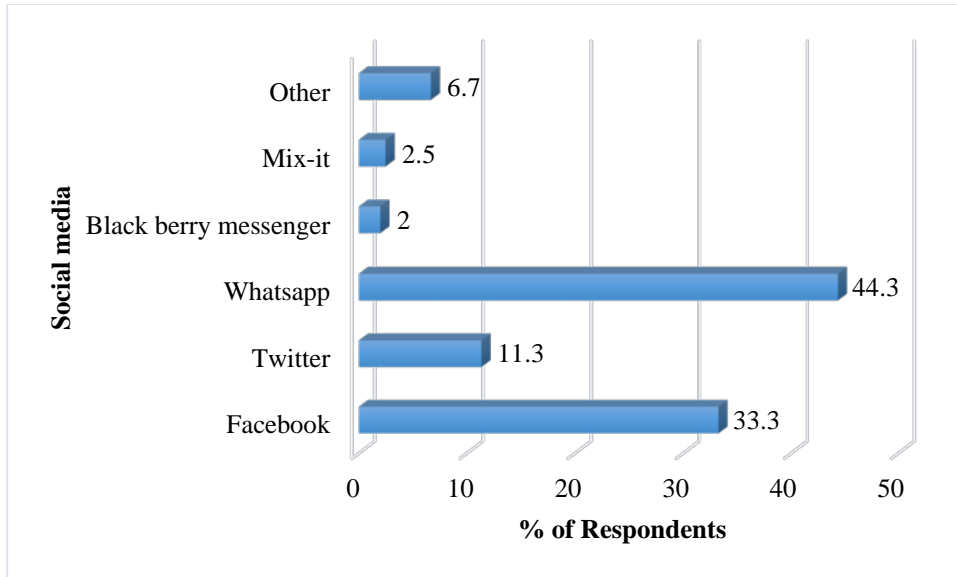
Figure 5.7: Teachers who reported access to social media

Ninety one (28.4%) teachers reported that none of the health activities took place in their communities and 33 (10.3%) indicated that vision screening was conducted in their community. Other responses regarding the type of health activities that took place in their communities are shown in Figure 5.8.
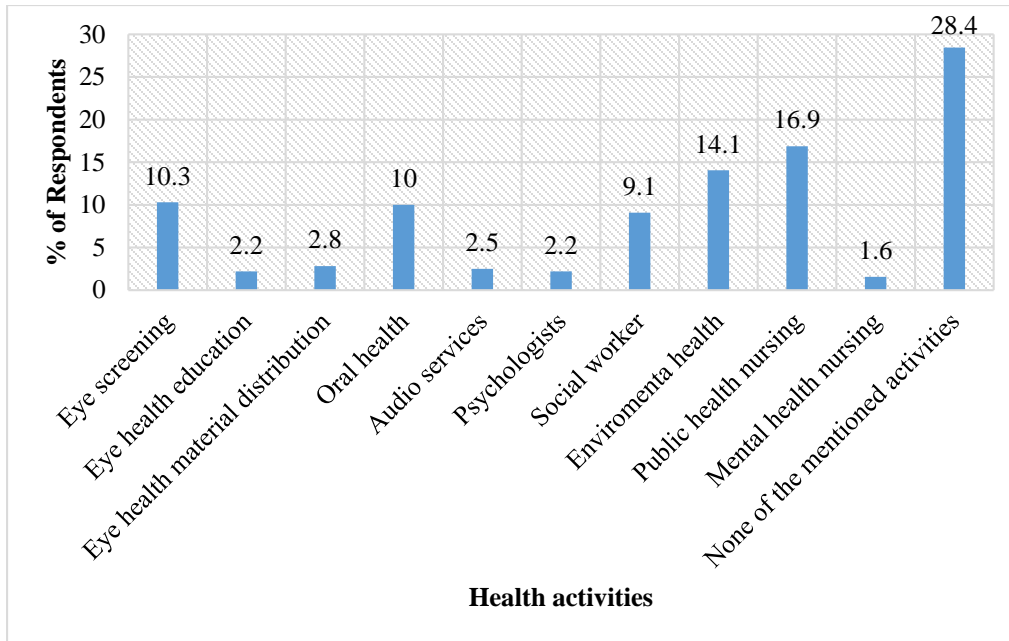
Figure 5.8: Teachers who reported health related activities in their communities

One hundred and forty (57.2%) teachers indicated that their schools admitted children with visual problems, 68 (28%) reported to the contrary and 35 (14.4%) were unsure. Two hundred (82.3%) teachers reported that vision screening was not a requirement for admission, 17 (7%) indicated that it was and 26 (10.7%) were unsure.

5.6.1 Teachers' knowledge about eye care

One hundred and forty eight (50.7%) teachers indicated that they were aware of optometrists, 46 (15.8%) each reported that they knew about ophthalmic nurses and opticians. Eighteen (6.2%) indicated being aware of the eye care team and 27 (9.25%) did not, while seven (2.4%) teachers were aware of ophthalmologists (Figure 5.9).
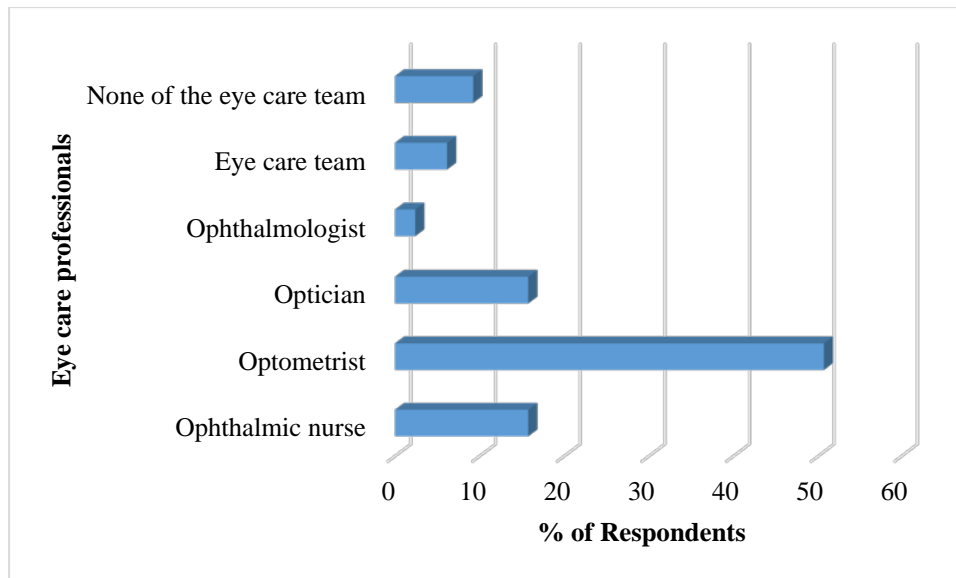
Figure 5.9: Teachers responses regarding knowledge of eye care professionals

One hundred and twenty six (51.9%) teachers indicated that they were taught how to detect visual problems in children during their teacher training programme, 110 (45.3%) reported that they were not taught and seven (2.9%) were unsure. Two hundred and five (84.4%) teachers were aware of the existence of a blind school in the country and 38 (15.6%) were not. One hundred and seventeen (48.2%) teachers indicated having knowledge about special needs for visual impaired children (such as albino), 95 (39.1%) reported that they had no knowledge of special needs and 31 (12.8%) were unsure. Of those who reported having knowledge about special needs for visually impaired children, 54 (32.7%) indicated that these children were always well protected from the sun, 27 (16.4 %) reported giving them extra time in class to complete their class work and 37 (22.4%) said the children sat in front of the class.

One hundred and sixty (65.8%) teachers indicated that they were aware of the visual problems an albino child presents with and 83 (34.2%) reported that they were not. One hundred and forty eight (60.9%) strongly agreed that having healthy eyes was an important factor for better performance at school, 63 (25.9%) agreed, 21 (8.6%) strongly disagreed and 11 (4.5%) were unsure. This was significantly associated with teachers who indicated being well informed about eye health (p=0.004). One hundred and ninety two (79%) teachers indicated that spectacles were used to manage refractive errors, 43 (17.7%) reported that eye drops are used to treat refractive

errors, 6 (2.5%) and 2 (0.8%) reported that that other methods of correcting refractive error such home remedies and traditional medicine respectively.

A cross tabulation between refractive error management and teachers who indicated being well informed about eye health showed that the association between these two categories were significant (p=0.008). Two hundred and one (82.7%) indicated that lighting in the classroom had a significant role in school performance and 42 (17.3%) had a contrasting view. One hundred and ninety two (79%) teachers were aware of the difficulties encountered by children with visual problems and 51 (21%) were not. This was significantly associated with teachers who indicated being well informed about eye health (p=0.035). One hundred and eighty four (75.7%) reported that they have never attended a training workshop to detect children with visual problems and 59 (24.2%) reported attending such workshop. Hence, those who attended such workshops were found to be significantly informed about eye health (p<0.001). One hundred and thirty one (53.9%) teachers agreed that there was lack of eye screening in schools, 67 (27.6%) strongly agreed, 15 (6.2%) strongly disagreed, 12 (4.9%) disagreed and 18 (7.4%) reported being unsure. Regarding knowledge of eye conditions, 135 (35.9%) teachers reported that they knew about refractive errors. Other responses regarding knowledge of eye conditions among the teachers are shown in Figure 5.10.
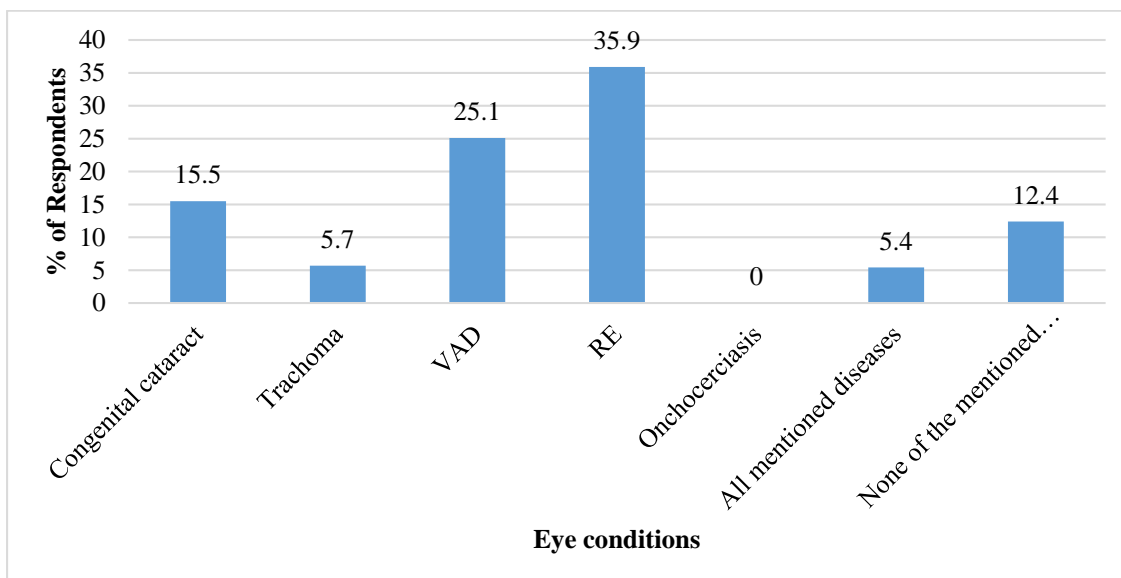
Figure 5.10: Teachers who reported knowledge of different eye conditions (VAD- Vitamin A Deficiency, RE-Refractive Error)

Seventy seven (20%) teachers indicated that they received information about eye conditions from newspapers. Other sources where teachers reported receiving information about eye conditions are shown in Figure 5.11.
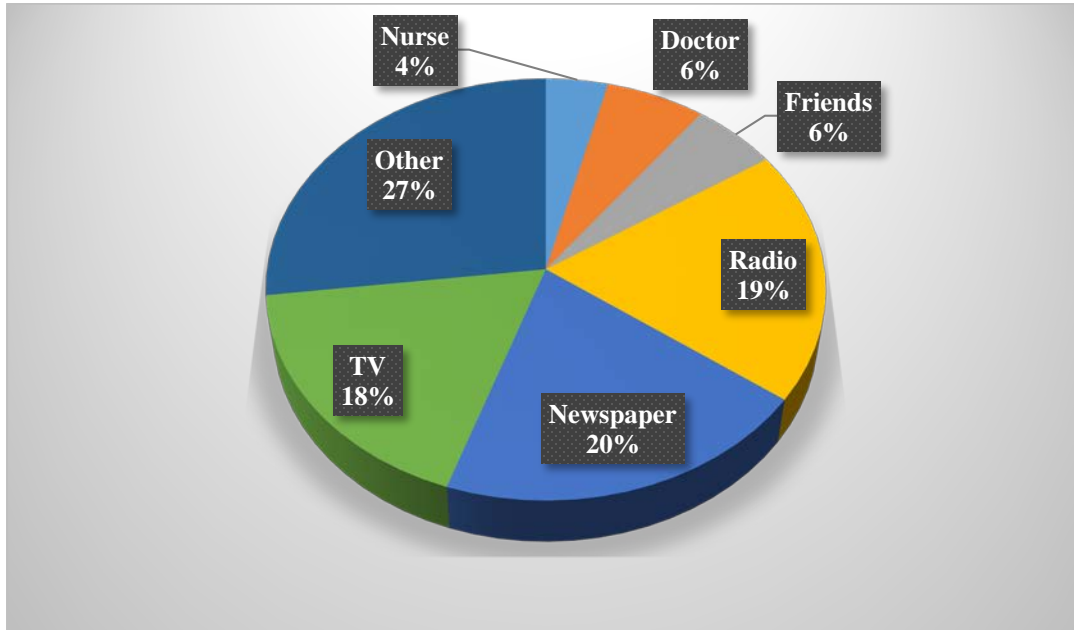
Figure 5.11: Percentages of the source of information about eye conditions. 'Others' refers to information received during teacher training.

Two hundred and nineteen (90.1%) teachers indicated that they were able to detect signs and symptoms of eye diseases. However, this was insignificantly associated with those who indicated being well informed about eye health (p=0.089). Of these, 15.7% were able to detect red eyes and 7.2% were able to detect all signs and symptoms that children presented with, with the other responses being illustrated in Table 5.9.

Table 5.9: Teachers responses about knowledge of ocular signs and symptoms

Item	Yes n (%)	No n (%)
Total	219 (90.1%)	24 (9.9%)
If yes		
Copying from friends notes	63 (8.2%)	-
Red eyes	121 (15.7%)	-
Persistent headache	107 (13.8%)	-
Continuous eye rubbing	95 (12.3%)	-
Squinting eyes	58 (7.5%)	-
Making mistakes when taking down information	83 (10.7%)	-
Closing or covering one eye	41 (5.3%)	-
Holding a book close to the face	94 (12.2%)	-
Losing his/her place while reading	55 (7.1%)	-
All of the above	56 (7.2%)	-

Two hundred and four (84%) teachers reported having seen children with visual problems in their teaching experience and 39 (16%) did not. Of those who reported having seen this, 143 (44.8%) observed them holding a book close to the face, with other responses being shown in Table 5.10.

Table 5.10: Teacher's responses regarding their experiences on children with visual problems

Item	Yes n (%)	No n (%)
Total	204 (84%)	39 (16%)
If yes		
Holding a book close to the face	143 (44.8%)	-
Squinting	81 (25.4%)	-
Losing his/her place while reading	55 (17.2%)	-
Closing or covering one eye	27 (8.5%)	-
Other vision-related problems	13 (4.1%)	-

One hundred and sixty seven (79.2%) reported that they advised children or parents to go to the hospital following detecting any sign of visual problems and 34 (16.1%) advised them to go the clinic. Four (1.9%) teachers advised the children to sleep or to wash their faces and return to class. One hundred and five (43%) teachers were unsure if children in their classes had squints or not. Sixty one (25%) reported having children with squints in their classes and 77 (31.7%) reported to the contrary. Of those who reported having children with squints, 55 (93.2%) indicated that they had less than five children with the condition and four (6.8%) had more than 10 children with squints in their classes. One hundred and fifty five (63.8%) teachers indicated that eye health

professionals have never visited their schools, 66 (27.2%) were unsure and 22 (9%) said that this had occurred. Among those who said that eye health professionals had visited their schools, 10 (45.5%) indicated they last visited between 2 - 4 years ago, seven (31.8%) reported that they visited more than five years ago and five (22.7%) visited more than a year ago. Eleven (39.3%) teachers indicated that optometrists were present during the visits, seven (25%) reported that ophthalmic nurses were present, six (21.4%) noted that general nurses were present and four (14.3%) that ophthalmologists were present.

One hundred and fifty three (63%) teachers reported that their schools were located in an area where there was a clinic/health facility, 78 (32%) reported that there were no clinic/health facility and 12 (5%) were unsure if such facilities existed. Of those who indicated the presence of a health facility, 70 (45.2%) indicated that eye care services were offered, 45 (29%) reported that they were not offered and 40 (25.8%) were unsure. A cross tabulation between the presence of a clinic in an area where the school was located and teachers being well informed about eye health found that the association between these factors was insignificant (p=0.415). From the teacher's experiences, 133 (54.7%) indicated that none of the children had to drop out of school because of visual problems and 70 (28.8%) reported that children dropped out of school, while 40 (16.5%) were unsure. One hundred and thirty three (55.2%) teachers reported that they were not well informed about eye health problems, 73 (30.3%) indicated being well informed while 35 (14.5%) were unsure.

One hundred and seven (44%) teachers indicated that refractive errors were not serious among their school children, 75 (30.9%) indicated that it was somewhat serious and 61 (25.1%) reported that it was serious. One hundred and thirty nine (57.2%) teachers were unsure if wearing spectacles had a significant impact on children's school work and 63 (25.9%) thought that it had an impact on their school work. Twenty seven (11.1%) teachers believed that children get teased by their peers for wearing glasses and 14 (5.8%) indicated that it had an impact on their relationships with their peers.

5.6.2 Teachers' practices about eye care

One hundred and twenty seven (52.3%) teachers advised parents to take their children for vision testing after complaining of persistent headaches when reading or looking at the board, 84 (34.6%) informed the principal about the problem, and 32 (13.2%) preferred informing the school health services. One hundred and fifty nine (65.4%) teachers considered eye problems as a potential cause of poor performance in school and 84 (34.6%) did not. One hundred and thirty four (55.1%) teachers reported that they had children wearing spectacles in their classes and 109 (44.9%) did not. One hundred and seventeen (86%) of those who had children wearing spectacles in their class had less than five children doing so, 12 (8.8%) had between 5 - 10 children wearing spectacles and seven (5.2%) had more than 10 children wearing spectacles. One hundred and forty nine (61.3%) teachers agreed that they did not monitor children wearing glasses and 94 (38.7%) monitored them. Monitoring children wearing spectacles was significantly associated with teachers who indicated being well informed about eye health (p<0.001) and teachers who were more likely to advise parents to take their children for eye testing (p=0.003). Ninety four (38.7%) teachers indicated that they referred children with vision problems to public hospitals and 65 (26.8%) preferred informing parents about the problem, with the other responses being shown in Figure 5.12.
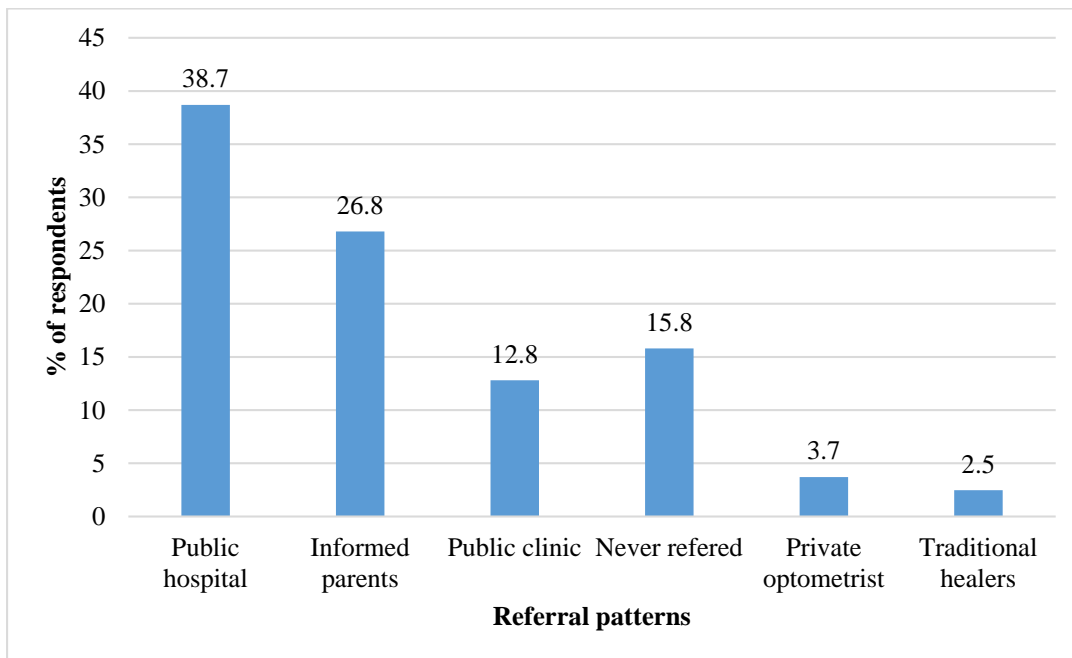
Figure 5.12: Teachers understanding of children's referral patterns

5.7 Demographic characteristics of eye health professional's

According to information from the Ministry of Health, a total of 20 eye health professionals worked in the public health sector and mission clinics in Swaziland during the time of this study. These included optometrists (n=5), an ophthalmologist (n=1), cataract surgeon (n=1) and ophthalmic nurses (n=13). A total of 15 questionnaires were completed, giving a response rate of 75%. The respondents who returned their questionnaires included three optometrists, an ophthalmologist, and 11 ophthalmic nurses. The respondents included 14 (93.3%) females and one (6.7%) males. Eleven (73.3%) respondents indicated that none of their relatives wore spectacles. All indicated that none of their children were born blind or had gone blind, and six (40%) reported taking up to 15 minutes to get to the nearest health facility that offered ophthalmic services. Four each (26.7%) reported taking 16 to 30 minutes and 31 to 60 minutes, while one (6.7%) reported that they took more than an hour to get to the health facility that offered ophthalmic services. Five (33.3%) respondents reported using private cars to reach their workplace and four (26.7%) used mini buses or taxis, while three (20%) each reported using the buses or walked to work. Twelve (80%) eye health practitioners indicated having access to social media such as Facebook, nine (60%) had access to WhatsApp, with other responses being shown in Figure 5.13. The majority of eye health practitioners reported that they had access to all mainstream media, with television being the most common (93.3%, n=14) followed by newspaper (80%, n=13) and radio (73.3%, n=11).
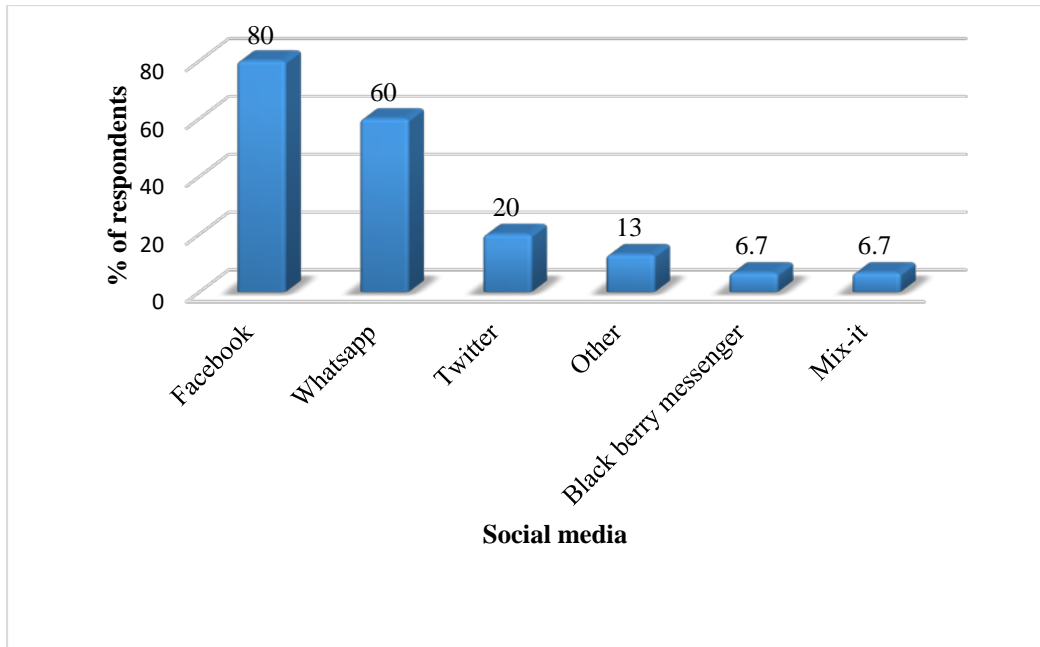
Figure 5.13. Eye health practitioners who reported access to social media (Other is skype or internet)

5.7.1 Eye care professionals' knowledge about eye care and services

Fourteen (93.3%) respondents reported that there were no guidelines available for standard paediatric optometric referral practices and only one (6.7%) indicated that they had such guidelines. Those who indicated that there was an absence of guidelines reported poor planning by government and the poor health status in the country. Thirteen (86.7%) reported that both standard practice guidelines and pediatric national guidelines for ophthalmic services were unavailable (Table 5.11). The eye health practitioners suggested the non-prioritization of eye health compared to other health disciplines being the cause of the lack of both guidelines.

Table 5.11. The percentages of eye health practitioners who reported standard guidelines for paediatric practice n (%) in relation to national guidelines for referring children

		National guidelines		Total
		Yes n (%)	No n (%)	
Standard Guidelines for paediatric practice	Yes	0 (0%)	1 (100%)	1 (100%)
	No	1 (7.1%)	13 (92.9%)	14 (100%)
Total		1 (6.7%)	14 (93.3%)	15 (100%)

Thirteen (86.7%) eye health practitioners reported that there were refractive services for children at their workplace (Figure 4.2). Five (33.3%) reported that paediatric ophthalmic care and educational services/facilities for the visually impaired and blind were available, respectively, with other responses being shown in Figure 5.14.
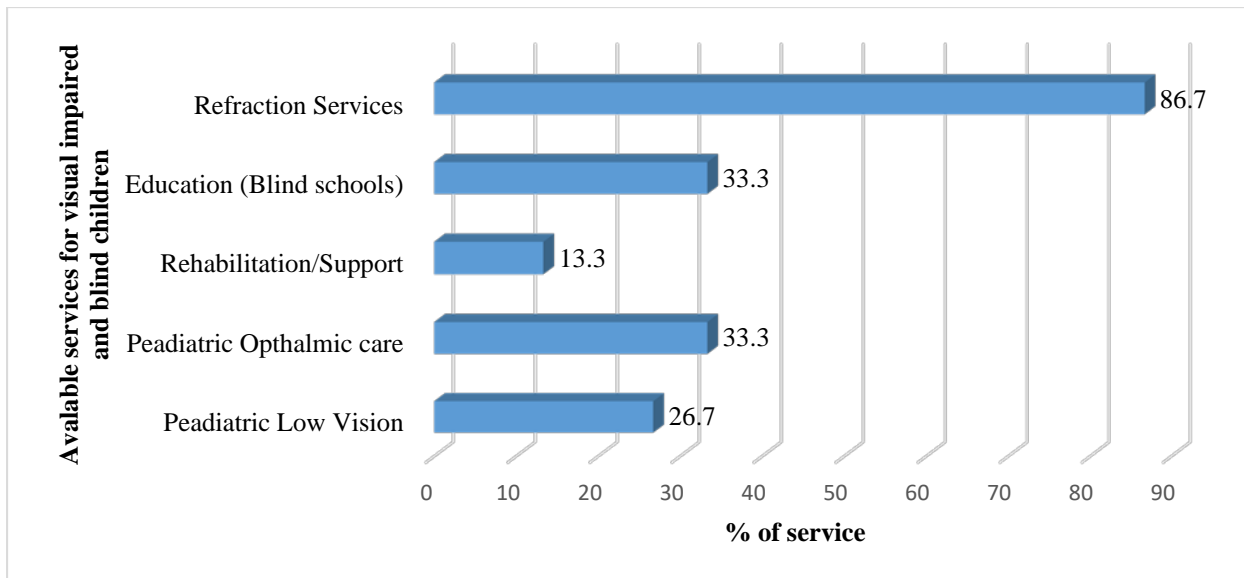
Figure 5.14: Eye health practitioners who reported available services for visual impaired and blind children

Ten (66.7%) eye health practitioners felt that there was a lack of integration between mainstream eye care services and other services, such as rehabilitation, low vision and education. Four (28%) reported that children requiring eye surgery were funded by government and 10 (66.7%) noted that parents paid from these expenses. Three (20%) indicated that funding from NGOs was very low, as were contributions made by missions and parents in the private sector. Fourteen (93%) respondents reported that no insurance schemes for children eye care were provided and 10 (66.7%) noted that there was no monitoring of paediatric ophthalmic services, while five (33.3%) indicated the use of reports to monitor these services.

Table 5.12. Eye health practitioners who reported indicators used to monitor paediatric services and programmes

Indicator	n (%)
Number of refracted children	5 (33.3%)
Number of children attending services	7 (46.7%)
Number of operated children	2 (13.3%)
Number of children dispensed glasses	8 (53.3%)
Number of paediatric cases seen	6 (40%)
None	2 (13.3%)

Eight (53.3%) respondents indicated that the indicator frequently used to monitor paediatric services and programmes over six months was the number of spectacles dispensed to children following an eye examination. Two (13.3%) reported using the number of children who underwent operations as an indicator for monitoring paediatric services, with the other responses being illustrated in Table 5.12. Ten (66.7%) identified cost, distance travelled and unawareness of available services by parents as the most common barriers to accessing eye care services (Table 5.13). Competing demands for resources was the least identified barrier (6.7%), while none of the eye health practitioners indicated language as a barrier.

Table 5.13. Eye health practitioners who reported barriers to accessing eye care services by children

Barrier	n (%)
Parent believe nothing can be done	4 (26.7%)
Language	0 (0%)
Culture and tradition	3 (20%)
Fear of hospitals and outcomes	3 (20%)
Competing demands for resources	1 (6.7%)
Cost	10 (66.7%)
Distance travelled	7 (46.7%)
Parents unaware that something can be done	7 (46.7%)

Fourteen (93.3%) respondents indicated that rural children were less likely to access eye care services, 11 (73.3%) noted that children from low income backgrounds were less likely to access eye care services, and 6 (40%) identified children living with multiple disabilities as less likely to

access them. None of the respondents identified gender as barrier to accessing eye care. Nine (60%) felt that they were less informed about eye health problems and six (40%) reported being well informed. Ten (66.7%) believed that children born blind or living with visual impairment do not have the same opportunities as normal children. Three (20%) felt that visually impaired or blind children have equal opportunities as 'normal' sighted children and two (13.3%) were unsure. Fourteen (93%) reported that most children presented with allergic conjunctivitis, and seven (46.7%) reported that most presented with RE. Both corneal injuries and VAD were the least reported conditions that children presented with (Figure 5.15).
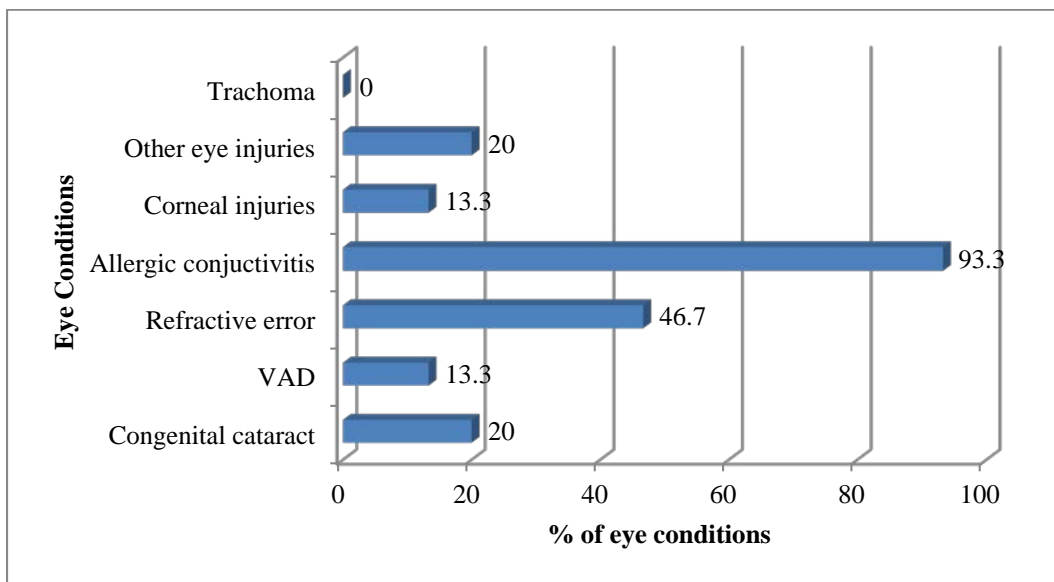
Figure 5.15. Eye health practitioners who reported conditions that children presented with at the eye clinics

Regarding strategies to prevent childhood blinding diseases, 11 (73.3%) suggested the use of awareness campaigns, nine (60%) suggested encouraging eye testing at an early age, seven (46.7%) school screening and one (6.7%) was not sure. Thirteen (86.6%) respondents felt that hospitals were not doing enough to address childhood blinding diseases. The lack of equipment (66.7%, n=10) and skilled personnel (60%, n=9) were the most frequently reported by the eye health practitioners. However, 12 (80%) eye health practitioners reported that their clinics consulted children and three (20%) indicated that they did not, regardless of the lack of equipment and skilled personnel. Ten (66.7%) indicated that they requested children to present every six

months and five (33.3%) preferred yearly visits. Out of a range of possible causes of poor vision in children, 14 (93%) identified eye conditions with hyperopia (26.7%) and myopia (20%) as being possible causes. None of the respondents indicated reading, television, computer games and headache as possible causes of poor vision.

Nine (60%) respondents indicated that they advised parents to test their children's eyes every six months. Three (20%) advised three and six year eye testing intervals, and 11 (73.3%) indicated offering advice to test children before schooling. Thirteen (86.7%) eye health practitioners advocated the use of radio, 10 (67%) civil society campaigns and nine (60%) both newspaper and television for spreading information about available eye health services. All the respondents agreed that spectacles did not make the children's' vision worse. Fourteen (93%) suggested that children presenting to hospitals should wear spectacles for RE correction when required, and a similar number reported being in favour of conducting paediatric eye testing.

5.7.2 Eye care professionals' practices about eye care

Eight (53.3%) respondents indicated that there were no outreach programmes and seven (46.7%) reported that their clinics offered outreach programmes. Furthermore, three (20%) indicated that their clinics had conducted outreach in less than a year, and six (40%) noted that their outreach programmes offered health and eye care services. Five (33.3%) reported that outreach programmes took place in their communities, but that none of the programmes were aimed at detecting and treating VAD. Thirteen (86.7%) of the respondents indicated that they were not part of teachers training for supporting visually impaired children while two (13%) reported that they were.

5.8 Summary

The policy review, quantitative and qualitative data collated have been presented in the results and show gaps in the health system, barriers to access, challenges hindering implementation of eye health programmes, needs and resources available in the public health system in Swaziland. This formative data that was collected was used to development an eye health access framework for children in the public education system in Swaziland.

CHAPTER 6: DISCUSSION

6.1 Introduction

This chapter provides a discussion of the results obtained in the study with the aim of developing an eye health care access framework for children in the public education system in Swaziland. A detailed discussion on policy review, responses of interviewed health and education officials, clinical facility assessment questionnaire as well as questionnaires completed by parents, teachers and eye health professionals is provided. The main findings of the study are discussed in the following subsections with respect to the study objectives.

6.2. Health policy review

A review of general eye policies and child eye policies for Mozambique, South Africa and Swaziland was undertaken to address Objective 1 of the study. Policy refers to a definite selected activity chosen from a range of alternatives to guide organizations, governments, institutions etc. to determine present and future decisions (Wan, 1995; Glendinning, 2003). Organizations need to review their policies to ensure that their objectives are met, with the analysis needing to take into account the involvement of all stakeholders as principal role players and the extent of their individual contributions to policy development. While South Africa has developed and implemented eye health guidelines, this has not been done by Mozambique and Swaziland. The Mozambican Country Strategy 2012-2015 for Eye Health Care and the National Ophthalmology Plan for 2007-2010 and the health and the school health for Swaziland were therefore reviewed.

6.2.1 A review of eye health care in South Africa

Despite the availability of an eye health policy to address children's' needs, the scarcity of resources in response to the competing health care necessities still pose major challenges to the public health system in South Africa. The country has provided continuous assistance to SADC countries through training of eye health and general professionals and specialist care for children in need of such services. However, South Africa's health resources appear to be insufficient to effectively achieve the goal of training and providing specialist eye health services in accordance with a report from IAPB (2014). Planning therefore needs to be done in a way that ensures

childhood blindness becomes a high priority (Borrel et al, 2013) through formulating strategic collaborations with other SADC countries and focusing on providing specialist eye care interventions and appropriate referral protocols for children. Some NGOs rendering eye health services further exacerbate long-term capacity constrains regarding inadequate health workforce (IAPB, 2014) as they are viewed as parallel structures in terms of service delivery to alleviate blinding diseases. These initiatives, while providing good short-term solutions, have to be integrated into government structures to make more meaningful contributions by ensuring the sustainability of services. In addition, as health education is not one of NGOs priority goals, there remains an absence of eye health seeking behaviour by parents for their children who access their services. Therefore, long-term gains can only be achieved through well-coordinated collaborative programmes that focus on promotive and preventive eye care services.

Under the Bill of Rights in the South African Constitution (Act: no 108 of 1996) Chapter 2 section 9, and the Convention on the Rights of Persons with Disabilities, equal rights for people living with visual disabilities are guaranteed (NDOH, 2002; DSD, 2016). In 1997, the South African White Paper on Integrated National Disability Strategy (INDS) dealt with issues pertaining to the disabled community on how their rights can be upheld and protected. The integration and coordination of disability issues in all government development strategies, planning and programmes were deemed vital. However, in 2005, the INDS was reviewed to ensure that all policies were updated and were not directly or indirectly discriminatory to those living with disabilities. Despite these efforts, many children living with visual and other disabilities remain marginalized in South Africa, as they are unable to practically realize these rights of accessing eye and general health services (DSD, 2016). Poor planning and inadequate implementation seem to be major concerns, characterized by the lack of specialized skills necessary to recognize and address vision loss, leaves many affected children with undiagnosed ocular diseases throughout their schooling experience. There is therefore a need for those in leadership positions to advocate for good health and a sound education, as these are required to underpin the basic human capabilities (Polat, 2011).

Governments have a crucial role to play in improving human living conditions, as well as providing access to basic services and infrastructure for children to ensure that they achieve their goals,

regardless of their visual disability. Although efforts are being made to ensure that the right services are offered by strengthening the eye health workforce to improve delivery and performance targets for better outcomes (NDOH, 2002; IAPB, 2014), in the absence of evaluations, however, the outcomes of such initiatives remain unknown, whether the objectives are addressed as stipulated in the eye health guidelines.

The WHO has formulated region-specific recommendations for child eye health care personnel that are incorporated in the South African guidelines. However, they do not take into account the impact that distances and geographic features (rivers, terrain) have on accessing health services. A 2014 IAPB report suggests that there is poor coverage and utilization of eye health services, as some hospitals operate with severe shortage of skilled eye health professionals. Furthermore, the report put an emphasis on health systems not having eye health as a high priority area. In the Human Resource Health Strategic Plan for the Health Sector, South Africa, 2012/1-2016/17, the fifth point under the 10-point plan focuses on "improving human resources, planning development and management", with strategic priorities for collaborating with other countries for recruiting and retention of health professionals (Human Resource for Health South Africa, 2011). This would improve service delivery in the public health sector and ensure better access for children in need of eye health services.

Many countries, including South Africa, are not coping with the changing patterns of childhood blindness in response to modified interventions or socioeconomic developments (Gilbert et al, 1993; Steinkuller et al, 1999). The South African Human Resource Health Strategic Plan confirms the decrease of corneal disease, but notes a rise in cataracts, glaucoma and ROP among children. These changing trends in childhood blindness require close monitoring, and identifying appropriate strategies to prevent avoidable blindness in order to reduce the blind years endured by children living with visual disability. Successful management therefore requires interventions from skilled personnel with appropriate referral mechanisms when dealing with childhood blindness (Borrel et al, 2013).

The low vision field of eye care has few practitioners, which is a cause for concern, as few children with low vision will receive appropriate intervention for them to utilize their remaining vision

maximally (Agarwal et al, 2010). Furthermore, as there are very few patients who can afford expensive low vision devices, the demand for these services has been limited (NDOH, 2002). Therefore, increasing access by establishing more low vision centres to provide affordable services at primary and secondary level by optometrists is essential for children requiring such services (NDOH, 2002). Adopting a multi-disciplinary approach and integrating eye care into PHC chronic management programs can broaden the workforce base. In rural and remote areas, sustainable models for providing outreach programmes that focus on priority eye health conditions need to be developed. Educators and parents of affected children need to be informed about the available options, and to adjust the environment to suit those living with visual disability.

6.2.2 A review of eye health care in Mozambique

In the absence of an eye health policy, the Country Strategy 2012-2015 for Eye Health Care by the NGO 'Light for the World' and the National Ophthalmology Plan have contributed to the amelioration of eye health service delivery in the country. The Mozambique Policy Brief indicates that eye health plans are included in the National Health Care Policy, however, it is missing at a district level, with most of the funding coming from international NGOs at provincial and district levels (Mozambique Eye Health Advocacy Group, 2014).

The National Ophthalmology Plan and Country Strategy 2012-2015 for eye health care by 'Light for the World' contains relevant aspects about eliminating the causes of avoidable blindness, which are in line with the objectives of the WHO's initiative, Vision 2020. However, the majority of the population (80%) use traditional health care and many children suffer from low birth weight, premature births, xerophthalmia, measles, chronic malnutrition, neonatal infections, which may lead to visual impairment and blindness (Mozambique Eye Health Advocacy Group, 2014). Poor eye health infrastructure and a scarcity of eye health professionals has led to the lack of knowledge about common eye health conditions among children, as well as poor eye care planning and service delivery (Mozambique Eye Health Advocacy Group, 2014). The skewed distribution of services has resulted in the exclusion of some provinces from receiving the required eye health necessities. For instance, poor access to eye health services, including daily consumables, remains a cause for concern due to the absence of service delivery plans at district levels and lack of funding for eye health care programmes.

It is important for a health policy document to define each profession that forms part of the eye care team, and to explicitly identify the level at which they are found, which is usually determined by the health system. The National Ophthalmology Plan identifies all the eye health professionals in Mozambique, however, it does not place them according to the different levels of care. Less focus is placed on the role of PEC compared to provincial and national level services, which disadvantages school health programme in the country. The secondary level is perceived to be weak, which contributes to barriers to accessing ophthalmic services by children. To set targets of eye disease eradication, adequate skilled human resources placed at all levels of care are an essential component for any plan to succeed. Borrel et al (2013) indicated the need to define the scope of practice, with clear set competencies for the different professionals, in order to address issues pertaining to dissatisfaction, turnover and emigration at all levels.

A survey conducted by a Mozambican health advocacy group in Gaza, Hulele and Matendele Provinces indicated that 80% of the respondents surveyed had some form of eye health condition. In addition, none of the respondents reported having presented to any eye health facility for treatment, citing poor service, lack of medication and spectacles (Mozambique Eye Health Advocacy Group, 2014). Another survey in Nampula Province indicated that eye health care plans at district level were non-existent, with no eye health interventions being conducted in some parts of Mozambique (Mozambique Eye Health Advocacy Group, 2014). The results of these two surveys suggest that it is difficult to know whether or not the aims/purposes/goals of the National Ophthalmology Plan and the Country Strategy 201-2015 by 'Light for the World' have been realized. It is therefore crucial that developed policies are translated into action, and those interpreting and operationalizing them understand how to undertake their proper implementation and monitoring. This will ensure that there is no disconnect between policy designers and implementers, all being committed to the success of developed eye health policies.

Eye care plans need to be based on realistic goals that rest upon identifying the most appropriate eye health care training to be achieved within a limited time to address the shortage of relevant skills required. The curriculum training of ophthalmic technicians and refractionists is viewed as outdated, and fails to keep up with changing trends of eye health care (Mozambique Eye Health Advocacy Group, 2014). It therefore needs to be revised before being approved and introduced in

training institutions, as this disadvantages children in need of ophthalmic services, as skilled workforce may not be available. Eye health promotion requires the involvement of various government structures, communities, NGOs and relevant stakeholders, making it important to inform society about the intended goals and the need to achieve a blind free society.

While the guidelines, protocols and policies may be in place, the right skills are required, and need to be rewarded and supported in addressing issues concerning service delivery, particularly when dealing with childhood blindness. None of the two documents mention any eye health care human resources development, indicating no priority focus in that area. However, the Ministry of Health Strategic Plan 2013-2017 in Mozambique underlines the need to scale up accessibility and demand of basic and specialized services, including ophthalmologists, as part of the strategic plan (Mozambique Eye Health Advocacy Group, 2014).

6.2.3 A review of health care in Swaziland

Swaziland continues to face social challenges and a declining long-term economic growth (Central Statistical Office & Macro International, 2008, World Bank, 2006). Therefore, despite improvements made in the health services provision, the health sector continues to have challenges as a result of the increasing disease burden due to HIV, the migration of skilled health workers, rising poverty, deteriorating indicators for social welfare and a de-motivated workforce (Human Resources for Health Strategic Plan 2012-2017, MOSHW, 2012). These consequences emanate from the centralized management system, resulting in poor coordination between the central and regional facility levels, with the health services becoming unresponsive to new general and eye health needs due to the slow upward communication of changing priorities. Therefore, there is a need to decentralize management duties and capacitate regional managers for effective and efficient coordination of general and eye health services in the country.

The majority of the Swazi population rely on the public sector (Central Statistical Office & Macro International, 2008) for health care services, including eye care, with those wanting to enter this area to provide service receiving training outside the country. The WHO classified Swaziland as one of 35 countries in Africa and 57 in the world with a shortage of human resource for health (HRH) (Human Resources for Health Strategic Plan 2012-2017, MOSHW, 2012). This has

impacted on the capacity of the country to effectively implement primary health and specialist care in both general and eye health. In addition, the poor human and financial resource management has contributed to the poor state of the health system (Human Resources for Health Strategic Plan 2012-2017, MOSHW, 2012), with managers not being given the necessary support to perform their duties effectively. There is a consistent refusal by the government to prioritize health training for health professions other than medical doctors, particularly eye health professionals, as the managers in senior positions fail to identify that the shortage of human resource in that field need to be addressed by re-evaluating ophthalmic services essential needs for children.

Health promotion has been largely ignored for some time, specifically with respect to HIV/AIDS, as many people are already sick and therefore require curative services. This mismatch between needs and services is due to poor health policy formulation that ignores critical issues on promotive and preventative services. Furthermore, the lack of a comprehensive multidisciplinary approach to eye, general health and social services also hinders the formulation of strategies aimed at addressing the quality of service delivery in the public sector. This has led to an increase in patients' loads, long queues, less consultation times and a reduced quality of healthcare. Other problems that have been highlighted are the inequality in the distribution of resources. People from rural areas are generally excluded from new programmes due to limited financial and human resources to introduce them in those areas. High unemployment and the lack of government support in the form of grants to those living in poverty (Central Statistical Office & Macro International, 2008) impacts on their ability to access eye health care services, even at public health facilities, as many are too poor to pay the cost of consultations and treatments. For a small country with limited resources, every effort needs to be made to ensure that the future citizens achieve their full potential, this being primarily determined by their state of health. Where such services are unavailable or inaccessible, children will not be able to complete their education, find work, or contribute meaningfully to the economy.

6.2.4 School heath policy review in Swaziland
The purpose of the Inqaba document is to target the most marginalized children, with the hope that the government will be able to provide quality health services and 'Education for All' in the future. However, the document is not inclusive of all health related issues that have a negative impact

during learning, such as eye health. This suggest that the school or learning environment is not conducive for children who are visually impaired or blind, staffed with unqualified teachers; have insufficient curriculum innovations that lead to increasing failure and dropout rates as well as slow response to education and training changes (MoTE, 2012). The integrated school programme further reiterates that the focus should not only be about getting children to school when threats to their participation or attendance and quality education are being ignored. Quality and access are interlinked, and policy makers need to identify factors contributing to the high dropout rates, particularly at the lower levels. It is the mandate of both the Health and Education Ministries to ensure that barriers to learning are eliminated, and that teachers are adequately trained and well informed about eye health including visual disability to avoid having discriminatory learning environment. These children need to be provided with the relevant optical or non-optical device, proper lighting, using of large print books, teaching aids, seating arrangement and classroom safety in schools to ensure free and fair evaluations for all children (Agesa, 2014).

The review of the Swaziland school health document revealed shortcomings of crucial aspects that have not been explicitly defined compared to school health documents of other countries, such as South Africa (Integrated school health policy, 2010), these being:

- *School health package:* The school health package is not clearly defined in the document and does not explicitly outline the health workforce required to render health services as well as health education in the programme. Children require approaches that are age appropriate to monitor and ensure that they grow well in a conducive environment and have the necessary health education to practice a healthy living lifestyle. There is no clear indication about the impact of financial constraints on learners and how that prohibits them from accessing the necessary treatment and follow-up care.

- *Roles and responsibilities:* In the implementation phase, the document only places responsibility on the head teachers/principals to ensure that the objectives of the programme are achieved using a school self-assessment tool. The roles and responsibilities of the Ministries of Health of Education, and other role players at all levels of the system for planning, managing and monitoring, are not clearly defined. There is a notable omission in the Inqaba document and education policy on the involvement of other Ministries and their respective roles in the school health programme, e.g. Social Development and Youth Affairs.

- *Human resource implication:* There is no indication of the nurse/child ratio to deliver individual learner assessments per visit and their responsibilities. Due to the lack of human resources, there may be a need for each nurse to assess many more children than nurses in neighbouring countries, such as South Africa, where one professional nurse assesses 200 learners per visit (Integrated School Health Policy, 2010).

- *Education status and barriers:* Children throughout the country need to be included, while the document puts an emphasis only on children attending school, which results in the exclusion of those who do not enroll or complete their schooling and those living with disabilities cannot access education. It also excludes any community involvement, with the services to be provided not being articulated in clear developmental stages that address specific health needs in schools and within communities. Section 30 of the Constitution relates to people living with disabilities, however, there is no specific section dealing with children's disabilities and provisions to differentiate between mental and physical disability (Ministry of Justice and Constitution Affairs, 2005; Harmonization of Children's Laws in Swaziland, 2012). The government has ignored learners living with disabilities who require special education, as the learning material is not adapted to accommodate them. With a few specialized schools for the deaf and the visually impaired, they remain the most marginalized group, despite efforts to integrate special needs training of teachers. The inclusive education policy goal relevant to mainstream instruction, which advocates for access regardless of any form of disability, gender, financial and health status, remains inadequately and inefficiently translated into practice.

6.2.5 Synthesis of policies reviewed

The implementation of the United Nations CRC recommendations, supported by regulatory health signatories, the availability of eye health guidelines at national and provincial level explicitly outlining the levels of care and the required eye health workforce at each level in South Africa, ensures that quality ophthalmic services are rendered at all times. In the absence of eye health guidelines in Mozambique, the United Nations CRC recommendations are being implemented and the Mozambique Country Strategy 2012- 2015 as well as the National Ophthalmology Plan for 2007-2010 to ensure better eye health services, with the levels of care outlined at national level

only. Swaziland has failed to fully implement the United Nations CRC recommendations, with no eye health guidelines being available. It is acknowledged that South Africa has a better infrastructure and best practices of eye health care, which can be utilized as a benchmark regionally. However, there seem to be similar challenges encountered, particularly during the implementation phase, as commitments from the governments appear inadequate for the success of health plans, as indicated by Ham (1997) and Ekman et al (2008) reports. These include lack of human resources, infrastructure and equipment as a result of poor leadership, weak health systems and strategies and epidemiological diversity. There is also less specific focus of children's eye health, as school health is faced with similar challenges to eye clinics regarding the lack human resource in eye health. This points to the fact that the presence of eye health policies does not translate to automatic access to services, with appropriate implementation being essential to achieving set objectives and targets.

Apart from various economic, social and political influences, there seem to be a lack of effort regarding health care planning, which is crucial for policy development (Wan, 1995; Glendinning, 2003). Instead, the vertical service approach is preferred for delivering eye health services, particularly by NGOs, which is only based on curative services that are delivered in isolation from other health services in these countries. Adopting similar practices among these countries may succeed in one country but prove problematic in another. Therefore, policy development needs to take into account the unique eye health challenges and understand the diverse culture in each country, as that may affect the treatment seeking behaviour. There is a need to put an emphasis on referral protocols (Sheffler et al, 2015), as these are usually disregarded by patients, even in a country where they are readily available, as a result of poor service delivery leading to dissatisfaction. Finally, formulating an eye health signatory body, integrated into the Medical and Dental Council in Swaziland to foster compliance on promotive, prentantive and minimum standards for children, is essential.

6.3 To determine current levels and factors that impact on access to children from the perspective of health and education officials

To address Objective 2, officials in the Health and Education Ministries are involved in policy designs and implementation, and are important stakeholders in the education sector, therefore were required to determine current levels and factors that impact on access to children.

6.3.1 Perspective of health officials

The Director of Health Services and the school health HOD from the Ministry of Health were interviewed regarding their perspectives on government policies, current and future efforts in providing quality child eye health service, from which the three themes emerged these being: level of access, structural barriers and knowledge barriers.

6.3.1.1 Level of access

According to the government officials interviewed, the absence of the eye care referral system, outdated National Health Policy, lack of human resource in eye care and officials lacking knowledge about eye care were the most outstanding issues contributing to poor ophthalmic services offered in the country. The absence of the eye care referral system from the primary level of care exacerbates overcrowding in tertiary facilities, resulting in health workers reducing consultation times with patients. However, this situation is not unique to Swaziland, as a study conducted by Sheffler et al. (2015) in South Africa found that patients bypassed primary level facilities and did not follow proper referral protocols. The organization of services, with particular focus on availability, affordability and adequacy, were the prominent challenges, leading to unsatisfied and unmet needs by patients, which reinforces negative perceptions about health care services offered in communities. It is recommended that eye health interventions be implemented at district level in Swaziland, as this is viewed as the most appropriate for addressing PHC (Ekman et al, 2008). This therefore requires organizational structuring of the health delivery system to promote continuity of eye care through proper referral linkages within each district, and availing resources in such a manner that the intended purpose for children to access ophthalmic services is fulfilled.

The consequence of a skewed distribution of eye health professionals is poor access for eye health services for children in the rural and remote areas of the country in particular. Eye care personnel are located mainly in urban areas, and are insufficient to cater to those presenting for eye care services, particularly children, which may be due to the lack of a functional referral system. Addressing issues pertaining to the even distribution across areas should be accompanied by providing the necessary infrastructure and equipment for better service delivery. Pauly et al (2013), and Powers and Faden (2006) highlighted the need for the distribution of services not to be used as a determinant of availability and access to health, but as of moral equal to all in need of health care services. Equipped eye clinics with health personnel need to be provided to service catchment areas and surrounding schools in the four regions with the aim of improving access.

The country is currently facing funding challenges in health care, and the workforce morale is low due to being over burdened with work, poor working conditions and low remunerations. Therefore, reviewing working conditions and availing incentives, such as a rural allowance and equipped facilities for those working in rural areas, could help to improve the situation.

The school health programme is ineffective in its ability to enhance the quality, relevance, equity and efficiency to ensure that all children have access to health services (Borrel et al, 2013). Key informants raised concerns about the continued exclusion of children in accessing the relevant health facilities following screening done at schools, as they are required to pay. Moreover, public school fees are very high, which excludes many children from attending school and benefiting from the school health initiative. Parents are entrusted with the responsibility of ensuring that children present to the clinic for eye health assessments without any assistance from the Health Ministry to transport them when they have financial constraints. Therefore, improving eye health seeking behavior among parents and decentralizing eye health services is essential to address these issues. An effective strategy will require cooperation between the Education and Health Ministries to ensure schools keep record of referred children and are able to follow up if they have been attended to at eye health facilities. Involvement of public health agencies working with communities through civil society, main stream and social media awareness campaigns will elevate the promotive and preventative aspects of PEC.

Rasales et al (2012) highlighted that social justice, as a core value, and health education are being ignored, and focus is on emergent responses depending on the health events at a particular time. This renders the value of having equal eye health care access for children as a rhetoric, as many are not afforded the opportunity of equitable access to available resource and knowledge. To eliminate disparities in eye health, all individuals in society should show commitment and play their role in creating suitable conditions for children that are accompanied by having effective institutions and practices in place. Public health agencies may prefer to adopt quicker ways of either reducing or eliminating health related issues with less focus on long lasting solutions (Rasales et al, 2012). This observation is evident in countries such as Swaziland, where many are already sick and require curative services rather than promotive and preventive services. District managers will require all the necessary support from the national Health Ministry in order to succeed in implementing their responsibilities (Ekman et al, 2008).

6.3.1.2 Structural barriers

The challenge of implementing appropriate policies in countries with weak economies such as Swaziland impacts on health service delivery. The country's National Health Policy (2006) ignores issues pertaining to preventative services, and does not have national priority goals and targets. It is therefore essential to review and amend the health policies to ensure that all set objectives are met (Wan, 1995; Glendinning, 2003) in order to respond to the scarcity of resources in eye health in the public health sector. As indicated by the Director of Health Services, and of concern, is the fact that the training of ophthalmic nurses is motivated by available funds and not need. Once qualified, many ophthalmic nurses are deployed to other health disciplines or to facilities lacking eye health infrastructure, exacerbating the already over-burdened public eye health system. This may be due to poor coordination and planning, suggesting the need for eye health policies and guidelines. This lack of guidelines for eye care in Swaziland contributes to poor or lack of eye health service provision for both children and the general population. The shortage of eye health professionals in the public sector impacts on the capacity of the country to effectively implement primary health and specialist care. Adopting PEC to be nurse driven in Swaziland as a basis of addressing barriers in the absence of adequate number of optometrist is warranted. A policy on staff establishment is key for coherent and consistent reorientation of the health delivery system. This will ensure improved management skills, coordination, dedication

and technical capacities from local community to the highest level of care that is sustainable, effective, accessible, efficient and long lasting eye health programmes.

Barriers such as geographic factors (that affect accessibility), health literacy and financial constraints, among others, need to be removed to improve access to eye health care. The collaboration to evaluate and monitor ophthalmic services between the Health Ministry and the CBM worked initially, but seems to have been unsuccessful. Outreach programmes have ceased to exist and the number of eye health professions required to render adequate services in the respective regions remains unknown, suggesting the need for proper planning of public ophthalmic services to address such challenges. Evidence gathered from the study indicate that vision screening initiated by the Health Ministry played a critical role in identifying children with visual problems. However, these screening programmes have stopped due to poor data management and subsequent lack of progress statistics, resulting in sponsors withdrawing their support. This suggests the need to have eye health monitoring and reporting systems for sustainable eye health care. Facilities that should provide tertiary services lack specialized equipment due to inadequate funding, resulting in few eye surgeries being performed, particularly among children. With a poorly-functioning referral system, the lower levels of care that are expected to support the tertiary facilities remain inadequately prepared to do so. There are a number of factors that need to be taken into account in order to address these issues, which include national budget allocation to eye health, functionality of staff establishment, policy on work procedure to address work ethic as well as the inclusivity of stakeholders at planning stages.

6.3.1.3 Knowledge barriers

It is assumed that, in the absence of relevant health and eye care policies, the knowledge about eye health among managers will be poor. The HOD of school health in the Health Ministry indicated that despite being in charge of the department for many years, she never knew who an optometrist was and the respective duties until a coordinator was employed. This has serious consequences if those tasked with health responsibility are also not informed about eye health personnel or competencies resulting in the prioritisation of other health disciplines over eye health. It is therefore necessary to have designated managers in eye health who will implement programmes aimed at reaching all citizens, including children through school health programmes.

Disseminating information on the roles and responsibilities of eye professionals and the use of awareness campaigns will help improve eye health seeking behavior.

6.3.2 Perspective of education officials

The Director of Education and the school health HOD from the Ministry of Education were interviewed regarding their perspective on educational policies, as well as current and future efforts in providing quality education, from which the three themes emerged these being: level of access, structural barriers and knowledge barriers.

6.3.2.1 Level of access

The Convention on the Rights of the Child (CRC) advocates for compulsory 'Free for All' (EFA) primary education. However, the government of Swaziland has struggled financially to reach that goal. This is due to existing barriers to achieving optimal health and development for children, which include the HIV/AIDS endemic, widespread non-communicable diseases and poverty (Coovadia et al, 2009). An effort has been made by the Education Ministry to accommodate those children excluded from the formal public sector school health programme by introducing an informal education syllabus in communities that usually enroll vulnerable and orphaned children. However, there are concerns that as the school health programme has not been effective in the formal public schools, the informal schooling programme is bound to encounter similar problems. Schools that promote health-seeking behaviours are therefore needed to achieve the goal of educating children in a healthy environment. The availability of health services provided by schools has become the determining factor for children in public schools, as some do not even have a first aid kit, health checks and awareness. This goes against the school health programme, which puts an emphasis on identifying those with poor eye and general health status being provided with the relevant treatment. Moreover, learning should include eye and general health education, and afforded the opportunity to have PEC services within their reach. It is of considerable importance to ensure that those providing or entrusted with monitoring children at schools are also healthy and have no uncorrected visual deficits that may impact negatively, causing them not to perform to their best abilities.

Certain important issues that have been highlighted by the key informants regarding factors hindering access to basic education by children include high dropout rates in the sixth grade, ill heath, not coping well while attending school and difficulties experienced to implement programmes aimed at improving enrollment rates. Other factors contributing to the non-completion of primary education include high repetition rate, high school fees, unqualified teachers and poor teacher remunerations (MoTE, 2012). Lewin (2009), Lewin and Sabates (2012) reported that in poorest countries, many fail to enroll at all, enroll over age or drop out without completing the basic cycle, with only two-thirds reaching the last grade of primary education. In addition, Watkins (2001) reported a similar trend among girls, with two-thirds dropping out without completing primary education. Regardless of persistency observed for over the years in the country, the legislation has remained ineffective in ensuring that girls are protected from any form of economic and social ostracism or neglect, as stipulated in section 29(1) of the Constitution and Article 32 of the CRC (MoTE, 2012). This is due to the fact that poor countries, such as Swaziland, seldom have the resources to initiate new programmes or projects to assist affected children, and rely on international donors and NGOs. Inclusivity of stakeholders in health and education needs to take into account the existing and emerging factors affecting children when planning or reviewing polices to address barriers to learning. Informed decisions by policy developers, and proper implementation regarding access to eye health and education, can be enabled by conducting research on indicators in the respective ministries to curb dropout numbers.

Children are affected by many eye diseases that have the potential to cause vision loss, which impacts negatively on their social, economic, education and later their employment opportunities. The impact is worse when siblings also drop out of school to care for the visually impaired children in the absence of any other care giver being available, and due to schools lacking appropriate facilities, resources and materials to train and teach the visually impaired and blind children as highlighted by Gooding (2006). There is therefore a need to incorporate an effective school eye health programme within the district health as well as the education systems. This will enable the functioning of the district eye health system to monitor and evaluate the school eye health programme and identify children within the public education system who drop out as a result of general health and visual problems.

6.3.2.2 Structural barriers

The place where children are born and live influences the outcomes in their general and eye health, irrespective of having medical cover and access to ophthalmic services (Lee and Cubbin, 2009; Pauly et al, 2013). The key informants shared similar views with regards to children born in rural places in the country, this placing them in an unfortunate situation, as the schools may lack sanitation and the dilapidated clinics may not offer eye care services. The education officials raised similar concerns as the health officials, highlighting poor management, misuse of funds and unaccountability as contributing to this ineffective health system to substantiate their views. Hence the scarcity of eye health professionals has led to the lack of knowledge about common eye health disorders in communities. There is also a need for close collaboration amongst all role players within the Ministries of Health and Education to ensure that the school health programme reaches all children in the public education system. In addition, this approach will need a policy to guide it, with school health coordinators from both ministries. The government needs to scale up interventions involving social welfare support, poverty alleviation strategies and access to health facilities as they can reduce many eye conditions.

The organization of the health system usually influences any other health related programmes carried out for improving the health status of the population (Levesque et al, 2013; Derose et al, 2011) through outreach and school health. This extends from the entry point (Levesque et al, 2013), which is supposed to be at school or community level, then followed by the way the health system is organized, which must ensure timely provision of appropriate eye and general health services. Responses from the key informants highlighted that most children in dire need of eye health services are denied access due to lack of clinics near the poorly resourced schools. With their ability to only provide basic services, the clinics are neither staffed nor resourced to provide ophthalmic services. The poorly functioning health system, characterised by poor organisational management, makes implementation slow or impossible for programmes aimed at assisting school children. To ensure better school health delivery, it is essential for the school health programme in the Education Ministry to adopt a decentralization strategy and to delegate such duties to the regional education officers to oversee the day-to-day functioning of the programme. Identifying barriers, such as organization, funding and mechanism used to implement successful eye health plan, is essential, as it will impact on the proposed health initiatives. This will further influence

the development of a sustainable eye health programme in public schools and curb the barriers encountered by children in accessing eye health services, such as availability, affordability, accessibility, geographical location and socio-cultural barriers.

6.3.2.3 Knowledge

Eye health programmes, in the form of eye health promotion, can be incorporated into teacher training programmes and form part of health education in schools. This will enable teachers to play a central role in eye health, as indicated by Powell et al (2009) and Korani et al (2015). The school eye health programme lays a foundation for many children to be health literate and access general and eye health services. Once these children are educated in schools with a curriculum that has incorporated eye health, they will become influential sources of eye health information for their families and the broader society, particularly in their communities. This will also enhance the spread of eye health information beyond the eye clinic and eliminate being totally reliant on government efforts in this regard.

6.4 Clinical facility assessment

To address Objective 3, an assessment of each facility enables the identification of gaps, strengths, current and future needs to plan for health in general, and eye care in particular (Khandekar and Mohammed, 2006). In addition, it determines if the efforts made with regards to quality, type and quantity of the services rendered meet the demands of the population targeted. Therefore, a clinical facility assessment questionnaire was required to determine the availability of eye care facilities and services for children in Swaziland in the study.

The lack of eye health and specialized personnel in the country is a cause for concern, as ophthalmic services remain inadequate to cater for children's needs. Alleviating childhood blindness can be achieved by implementing sustainable and equitable programmes with an even distribution of early intervention of paediatric eye care services across the country. Despite the critical role that they could potentially play in preventing long-term blindness in children, many African countries still do not report having a single paediatric optometrist (Agarwal et al, 2010). Moreover, the lack of low vision specialists is also a cause for concern, as children with low vision cannot perform their normal activities of daily living, including reading, despite the possibility of

their vision being utilized maximally with appropriate interventions (Agarwal et al, 2010). The WHO advocates for a team approach when dealing with child eye health care, and a paediatric team should comprise of the following: experienced optometrist in refracting children, ophthalmologist, paediatric ophthalmic nurse, anesthetist, orthoptist, low vision and rehabilitation specialist (Shrestha, 2011). Ophthalmic services without these professionals complementing each other render less effective eye health services, and often result in children experiencing delays in receiving appropriate care due to the high burden on under-resourced or inefficient health services. Therefore, a public eye health based team approach with proper referral mechanisms within the countries included in the study is essential.

There is limited focus on promotive and preventive care as well as rehabilitative services in Swaziland, as only refractive services are the most rendered in the eye clinics operating in the country. This may be as a result of the shortage of equipment and human resource, which results in the services being offered varying across facilities, with some conducting blood pressure and sugar testing as routine. Of concern is that optometric services, such as contact lens fitting, are not available in any of the public eye clinics. Those in need of such services need to go to private optometrists, which may be too costly for the average citizen. Training more optometrists is essential, as well as their need to be registered with a health statutory body that provides specific guidelines for children to ensure compliance and equipping public eye clinics with the necessary equipment for contact lens fitting. Such guidelines will require standards to be set regarding proper referral protocols that will suit the needs of children without any financial burden on parents.

In the eye clinics surveyed, some of the basic equipment, such as penlight torches and prism bars are not available, which negatively impacts on the delivery of comprehensive eye care services. Mason and Mathenge (2010) articulated that in many low-income countries, either essential equipment is not working or not available, hampering eye service delivery. It is important for the equipment to be factored in when planning and designing eye health policies, as well as the eye care professionals who will use such equipment. This planning should be accompanied by appropriate infrastructure development to ensure that there is enough space to keep optically sensitive equipment and consumables. Equipment such as the optical coherence tomography may be a necessity only at tertiary eye clinics. For those requiring eye drops, the drug supply chain

showed high failure to comply with ensuring that patients have access to the medication prescribed to them, which needs to be prioritized to improve service delivery by ensuring improvement of compliance through re-training and monitoring as directed by eye health guidelines.

The Vision 2020 target recommends at least one bed for every 20 000 population for an eye ward and an ophthalmic operation theatre (WHO, 1996). This study found that only 47 beds were allocated to eye patients in facilities that offered cataract and minor eye surgical procedures. These facilities are insufficient to cater to the needs of the whole country, bearing in mind that three out of five ophthalmic facilities do not have an inpatient eye ward. An analysis of the beds per region showed that they were inadequate to cater for those in need. While only two regions had operating theatres with a few skilled personnel, many patients had to either wait for the staff to visit the nearest eye health facility, or to travel long distances for surgery. It is therefore critical for the country to have an eye health policy to address all the challenges identified by the clinical facility assessment. The operational steps required include allocating an adequate national budget to address eye health professional training, developing the necessary infrastructure, purchasing equipment and essential drugs. The drug supply policy or the pharmacy bill needs to be reviewed in order to include essential ophthalmic drugs, this requiring the cooperation of relevant stakeholders during the planning stages.

6.5 Parents' knowledge and practices about child eye health care

Knowledge, practices, attitudes, beliefs, culture and perceptions are extensions of societal norms (Agesa, 2014), with culture varying within and between communities. Parents play a significant role in ensuring that their children access eye health services and education, hence their inclusion in the study, with Objective 4 determining their knowledge and practices about child eye health care.

6.5.1 Demographic profiles

Many parents reported taking a long time to reach the nearest eye health facility, which could be due to the fact that they are few eye clinics in Swaziland, as well as factors such as the socioeconomic, climate, a scarcity of human resource and poor road infrastructure. The educated parents who participated were often civil servants who generally resided in urban areas where eye

care facilities are available, public transport is accessible, or they have their own private transport. However, many more of the parents were unemployed, which is in line with the 2005 Ministry of Economic Planning and Development report. The literacy rate among parents was also in line with 2006 census report at 78% (Central Statistical Office & Macro International, 2008). A high utilization of public eye care facilities was noted among parents who rely on public transport, which may be related to their varying socioeconomic status. Regardless of the time taken, most parents took their children to public facilities for eye testing.

The results on social and mainstream media suggest that the spread of information about eye health can be enhanced, as many respondents indicated having access to social media. However, increased access was noted among parents who had a tertiary qualification compared to those who did not. Parents who had eye health education in their communities reported being well informed compared to those who indicated having access to vision screening and eye material distribution. This highlights the importance of eye health education, even when vision screening services and eye health material distribution are offered at community level. The lack of eye health related activities, such as vision screening in communities, suggest the need to prioritize them. The lack of vision screening could also be due to the fact that other health related programmes, such as nursing and medicine, which are perceived as 'more essential' services, are prioritized. Therefore, integrating eye health services into the PHC programmes will circumvent the isolation of ophthalmic services.

6.5.2 Parents' knowledge about eye care

Many parents had never taken their children for an eye test for various reasons, such as the belief that their children's vision was adequate, a lack of knowledge about regular eye tests, and not seeing the need to do so. This could be due to poor knowledge about health care in general and eye health care in particular, which results in low utilization of eye care services. Shrestha et al (2014) reported that poor health seeking behaviour among parents for their children was a result of poor health literacy. Parents with less education reported that they did not see the need for their children to have an eye test, with only a few with tertiary qualification reported such results. This suggests that the level of education may play a significant role in the knowledge of their children's eye health. Furthermore, respondents with less education experienced more financial constraints

and a greater lack of available eye care services than those who had tertiary qualifications. This could be due to those with tertiary education being able to afford to take their children for eye testing because they are employed and possibly reside in areas where eye care facilities are available. Again, the less educated parents demonstrated less knowledge regarding reasons for not taking their children which is supported by the fact that most indicated that only old people experience eye problems. Eye health education targeting all parents may help to improve eye care seeking behavior for their children. Taking child for a comprehensive examination before admission to school needs to be put down as requirement at primary school level in order to redress visual deficits cases. In doing so, many children will have had an eye test in the first six years of their life, and appropriate early recommendations will be made for them to be placed in a school rather than waiting for years to realize child fails to cope because of visual problems.

A cross tabulation between education level and eye test revealed that highly educated parents were more likely to take their children for an eye test than those who were less educated. However, few parents took their children for eye testing before they started schooling. While parents with high levels of education would be expected to know the importance of early intervention to avoid visual problems that can lead to amblyopia and visual impairment or blindness, the results shows that the level of education was not a determinant for parents taking their children for eye testing. This points to the need for all parents, regardless of education level, to be informed about the importance of early intervention among children to narrow the gap between those at an advantage to receive eye services and those who do not, regardless of their socioeconomic status in society.

Parents waited for warning sign/symptoms before taking their children for eye health care, which could suggest that they were not knowledgeable about preventative eye care issues that affected children. Nirmalayan et al (2004) found that respondents did not see the need of having periodic eye examinations unless the child complained or parents identified the problem. Frazer and Kleinstein (2009) and Owsley et al (2006) identified the lack of knowledge as preventing parents from taking sound decisions about preventing visual disorders as well as systemic conditions that have visual consequences. However, some parents in the current study indicated that they took their children to an eye care facility after suspecting vision problems or were referred by general practitioners (albeit few). This is promising, as it indicates that some parents did take action when

they suspected vision problems. However, there is a need to promote preventative programmes for children, which can be conducted as part of general wellness programmes that target parents/guardians.

The low referral rate by medical doctors may be due to the non-utilization of health care facilities and lack of eye care services to which to make informed timely referrals. However, our study found that people rely on doctors and nurses for eye health information. The fact that teachers did not received adequate eye health training from their training college, coupled with the ineffective school health programme, resulted in them being unable to identify children with visual problems and give proper advice to parents. Parents' range of education levels took their children for eye testing at a late stage in life, 6 to 10 years and over, regardless of having an immediate family member wearing spectacles. However, having an immediate family member who wore spectacles influenced the eye care seeking behavior among parents regardless of their education level. This could possibly be due to previous exposure to eye health services and parents being cautious. Respondents who had access to social and mainstream media took their children for eye testing, suggesting that these media instruments play an important role in spreading eye health information about available eye services. Rubbing of eyes repeatedly prompted parents across all levels of education to take their children for eye testing, which is a positive result. However, there are other eye conditions that do not have obvious signs that need to be diagnosed at an early age before they cause irreversible damage, highlighting the importance of child eye health education focused on parents/guardians, legal care-givers and local chiefs, as well as formulating proper communication linkages.

Parents with higher education demonstrated better knowledge of eye conditions that affect children than those with lower education levels, however, conditions such as congenital cataracts were unfamiliar to all the parents. This suggests that the level of education might not necessarily indicate that parents are well informed about the important eye health issues affecting children. A few parents indicated that their children dropped out of school because of visual problems. Similarly, several parents indicated having children in their immediate family who were blind. These few cases require intervention as they are usually marginalized and denied their basic rights to access health, education and social services, as asserted by Corn et al (1996) and Jones (2000).

There is therefore a need to ensure that these children receive all the support from their parents/guardians and communities, as available resources, such as the school for the blind, are available to cater to their specific needs. Many parents reported that eye care practitioners explained the causes of visual impairment or blindness to them.

Barriers that may arise from this exercise, such as language, attitudes and culture, need to be addressed by eye health professionals. This will assist parents to hopefully make informed decisions about the situation affecting their children. Many parents failed to note the age of onset of vision loss for their children, with early identification of visual problems often leading to a reduction in avoidable blindness. Frazer and Kleinstein (2009) reported that even among the most perceptive parents, children can often go unnoticed if they have a visual problem until a late stage when damage cannot be reversed. Factors such as poor eye health literacy, socio economic status or prioritizing other health related illnesses among parents, guardians and the community at large are some of the reasons for the non-utilization of readily available ophthalmic services for their children. Therefore, early intervention can be achieved by investing in awareness campaigns on promotive and preventative eye care to improve eye health seeking behavior among parents or guardians.

Most parents indicated that blind children attended the school for the blind, and many of the children attending this school were children of educated parents. Some educated parents highlighted that they did not know where to send their children for schooling and were scared that their children would not cope, while those with less education indicated that blind children cannot be educated. These reports from parents showed that negative perceptions about blind children and education exist among parents regardless of their education level. A school report from South Africa highlighted the fact that parents played a role in preventing blind children from attending school due to certain perceptions or beliefs. These include the perception that without good vision the child cannot be educated, blind children cannot cope at school, parents lacked knowledge where to send the child and existence of special schools, fear of children safety, and the high cost of enrollment (DSD, DWCPD and UNICEF, 2012). In cases where parents were informed about existing facilities for the blind, limited space was a challenge for many children. It is suggested that the government scale-up interventions to assist children living with visual disabilities by

increasing the number and capacity of blind schools to take in more children as well as equipping teachers with relevant skills to teach the visual impaired and blind.

Although many parents reported that poor vision affected their children's school performance, a significant proportion thought that it did not. These findings suggest the need for awareness campaigns among parents, regarding the possible negative effects of poor vision on school performance. Some parents knew that eye diseases can cause poor vision, as well as factor associated with watching TV, and might have observed their children moving closer to the TV or peering. Computer games, headaches and reading were also reported as causes of visual problems by parents. These may indicate the presence of RE or other ocular problems that manifest when performing visually demanding tasks. Therefore, the spread of information about available eye care services need to be emphasized to parents, together with public health messages about preventive eye care that is aimed at increasing eye heath utilization and literacy (Chandrashekar et al, 2007; Palagyi et al, 2008; Alrasheed, et al 2016).

The lack of knowledge about childhood eye diseases may hamper early interventions that could potentially prevent vision loss. Reports by Flores and Vega (1998), Owsley et al (2006), Robin et al (2004) and Frazer and Kleinstein (2009) suggested that early intervention is important in providing good visual outcomes. The authors concluded that the lack of health literacy could explain how health care information can be disregarded as well as prioritising other health services without understanding the importance of a child to have a vision examination is a cause for concern. The current study also reports similar findings of knowledge inadequacy about eye health among parents.

Eye health education appears to be a neglected subject in health promotion efforts, possibly due to the weak eye health system in Swaziland. This requires all relevant stakeholders, including the government and NGOs, to address poor eye health literacy. Most parents reported that they knew about eye conditions such as RE, allergic conjunctivitis and VAD. Exposure to eye health care and the prioritization of RE services (Muhit et al, 2011; Shrestha et al, 2014) are possible reasons for these results. In addition, most parents had some level of education, which plays a vital role in influencing how information can be obtained, understood and shared (Frazer and Kleinstein,

2009); Flores and Vega, 1998). A few parents indicated that congenital cataracts were among the major causes of blindness among children, which could be due to the fact that this type of cataract is removed early in children. Gogate et al (2009) argues that established links among health care providers and within communities increases the numbers of children in need of cataract surgery at an early age due to improved problem identification. Parents need to be perceptive about their children visual status and ensure that they go for periodic eye examinations. Advocacy for parents' through eye health education in communities and media campaigns as a public health goal is therefore necessary.

The fact that few health professionals were reported as the main source of information about eye conditions may be due to the lack of human resources in eye health (Robin et al, 2004; Frazer and Kleinstein, 2009). Parents reported mainstream media, such television, radio, and newspaper, to be their main sources of information about eye health. These mainstream media are accessible to most parents and should be encouraged to continue delivering positive messages about child eye health and inform communities about where eye care services can be accessed. Many authors (Gresenz et al, 2007; Muller et al, 2007; Fortney et al, 2011; MacKinney et al, 2014) have indicated the use of mainstream media as a powerful tool to spread eye health information targeting mostly those in impoverished areas that lack eye care facilities. However, only those who could afford such items can utilize this privilege and making it important for government to offer affordable eye health in the country.

Many parents reported that they have never had a health official visiting their communities, which could be due to the fact that the majority of the population live in rural areas, where eye health and human resource services are scarce. Ali et al (2007), Kawuma and Mayeku (2002) and Kello and Gilbert (2003) reported similar results. Those parents who reported that eye health professionals visited their areas may be located in urban areas where there are eye health facilities. Many parents indicated that optometrists were the highest number of health professionals during these visits to conduct outreach. As there are currently only five optometrists in Swaziland, parents may be confusing other health workers, such as ophthalmic nurses, with optometrists.

Balabanova et al (2007) suggested that the expansion of the health system was important to improve services, however, it often fails to achieve the desired outcomes. In the current study, many educated parents reported having a health facility in their home area, with very few offering eye care services. This lack of eye health services both in urban and rural areas corresponded with the responses of parents who indicated that they were not informed about eye health care, even among those who were educated. Many of those who indicated being well informed about eye health had never taken their children for eye testing before their first year of schooling. These responses could possibly be due to non-exposure and poor eye health seeking behavior of parents. It is therefore recommended that eye health services be made available to areas where they are scarce or unavailable by decentralizing eye services, coupled with promoting PEC service utilization, with an emphasis on referral protocols. Training of health workers, facilitated by the eye health professionals, will benefit communities through eye health education, which needs to be continuous to empower health workers to distribute eye health information.

The presence of a health facility in the community was not a determining factor of having eye health professionals visiting the clinic, even though parents reported less than a year visits. It is such circumstances that widen the inequality gap regarding accessing eye health services by children disadvantaging those living in communities without clinics. Priority areas lacking health clinics need to be identified in order to eliminate barriers such as accessibility, geography and affordability.

The closer the health facility is to those who need it, the more likely it would be utilized (Courtright et al, 1995) this being confirmed by the study parents residing in communities with health facility who were more likely to take their children for early eye examination. There is a need for public health messages about preventive eye care and diseases aimed at increasing utilization of eye care services even in communities without health facilities. Parents who reported that eye health professionals visited their areas were not knowledgeable about eye health. This is possibly because promotive and preventive measures in eye health are lacking in the country. In addition, due to the chronic shortage of eye health professionals, clinics do not prioritize the spread of eye health information beyond the clinic walls, highlighting the urgent need of eye health guidelines.

Many authors have advocated for the use of electronic devices for accessing health information to address the traditional barriers to access, such as geography, finances and cultural factors (MacKinney et al, 2014; Gresenz, et al, 2007). Most parents reported the use of mainstream media to promote public eye health campaigns. An Australian report by Muller et al (2007) indicated that diabetic patients were informed about eye consequences of the systemic disease through the use of radio, regional television and newspaper. Information can also be displayed on billboards to inform communities about priority eye conditions and available eye facilities. A few parents still believed that traditional healers can play a role in spreading information about eye health. This cadre of health workers could be trained by eye health professionals and used as a resource to disseminate information about eye health, as they seem to be more acceptable/trusted in certain communities.

More than half of the parents agreed that spectacle wear by children is good, while 24.8% were unsure and 24.8% reported to the contrary. Nirmalayan et al (2004) found that respondents in their study believed that all children below the age of four years should not be allowed to wear spectacles at all. In our study, more parents with less education indicated having problems with children wearing spectacles, whereas children of educated parents were reported to be wearing spectacles, suggesting that they were more likely to be taken for eye testing. Certain eye conditions may require spectacle wear regardless of the child's age. Approximately 20.8% of the parents reported that spectacles can worsen vision, with no significant difference in responses between parents of different education levels. This indicates the need for eye health practitioners to explain to parents the benefits/advantages of wearing spectacles.

Overall, one third of parents both strongly agreed (33.5%) and agreed (30.1%) that children born blind have equal opportunities as sighted children. This suggests that parents do not view blind children as different from other 'normally sighted' children. The government needs to be encouraged to make available the infrastructure and human resource support to assist blind children for them to realise their full potential.

6.5.3 Parents' practices about eye care

Eye drops were dispensed to most children to treat infections compared to spectacles to correct RE. The low use of spectacles in children reported by parents may be due to the low prevalence of refractive errors, as reported by Wedner et al (2008). Some parents preferred taking their children to private optometrists to get their eyes tested, while others took them to public hospitals or clinics to access these services. Many parents who indicated being well informed about eye health took their children to private optometrist rather than public facilities. This may be due to their lack of awareness about the available ophthalmic facilities, as well as the socioeconomic status and being able to afford private services. In addition, the lack of eye health professionals and equipment might have influenced parents to take their children to private optometrists. Therefore, eye health awareness programmes are essential to ensure that communities are informed about eye clinics in their area when they are available. While many parents reported being well informed about the purpose of wearing spectacles and did not have a problem with their children wearing them, a few felt that it was not right for children to wear spectacles. This highlights the need to educate parents about the value of spectacles wear for children with visual deficits. Applying eye health programme as specific interventions for parents by taking advantage of successful health programmes such as "national immunization days" need to be considered.

A few parents agreed that children may undergo eye surgery when indicated, this being similar to Frazier and Kleinstein (2009), Newland et al (1992), Shirima and Geneau (2006), who reported that some parents were reluctant to take their children for eye surgery, preferring to wait until they were older. However, delays can worsen the prognosis of an eye condition, many of which, such as congenital cataract, require prompt interventions. This result indicates the lack of knowledge among parents about the need for early interventions to prevent vision loss. These beliefs could be due to varying reasons, including that surgery is prone to damaging the eye, the fear of outcome, cost, as well as poor knowledge about ophthalmic services, among others. A few parents reported culture, social barriers and accessibility to services for not undergoing surgery. This suggests that the availability of a health facility does not automatically translate to access for communities. People need to be informed about eye health and become knowledgeable about why they should make use of such facilities through mainstream and social media awareness campaigns. Parents

need to monitor children's visual status from an early age, as treatment is more likely to lead to good prognosis than later in life.

The study findings also highlight that being well informed about eye health does not guarantee best practices by parents, as they were less likely to allow their children to wear glasses and undergo surgery, while other studies reported the contrary (Fraser and Kleinstein, 2009; Muhit et al, 2011; Shrestha et al, 2014; Odedra et al, 2008). Poor utilization and exposure due to a lack of ophthalmic services and human resources are possible reasons for the findings in this study. There is a need to educate the public about the importance of regular eye examination and the consequences of delayed eye health care.

6.6 Teachers' knowledge and practices about child eye health care

Good health and a sound education underpin the basic human capabilities for children. More focus needs to be directed towards improving the school setting by entrusting teachers to go beyond their scope of teaching as they spend a considerable amount of time with children at school. The school environment usually determines the degree of either inclusion or exclusion of children in education, particularly those who live with a visual disability. Therefore, teachers were required to address Objective 4 by determining their knowledge and practices about child eye health care in the study.

6.6.1 Demographic profiles

The majority of teachers were females, which is likely to be due to having more females in the teaching profession in Swaziland (MoTE, 2012). Although many teachers were aware of their immediate family members who wore spectacles, nearly half (44.2%) reported that they were not aware of any family members who wore spectacles. Spectacle wear within immediate family does not translate to being well informed about eye health care, which suggests the need for eye health education in schools.

The variations in the times reported by the teachers to get to the nearest health care facility could be due to Lubombo region only having one public eye clinic, whereas Hhohho region has two. It is therefore expected that they will take different times to reach these facilities, which may also be

influenced by their socio-economic status and their access to and use of public or private transport. As most teachers had devices to access social and mainstream media, this can be useful in promoting health and eye care messages for them to be well informed about children eye health.

Compared to other health disciplines, eye health programmes are not given a high priority according to the respondents. This agrees with the reports by Apple et al (2000) and Abdullah et al (2012) that in low income countries, such as Swaziland, there is scarcity of eye health care workers, facilities, equipment, and outreach programmes. If these services were available, they were mostly likely to be found in urban areas and offered curative services only. Ali et al (2007) and Borrel et al (2013) suggested introducing new programmes in impoverished areas in an attempt to address the limited human resource and financial capacity. A similar approach to that used by Ali et al (2007) and Borrel et al (2013) could be adopted in Swaziland for child eye health care. Teachers indicated that health outreach activities, such as public health nursing, environmental and oral health, were almost non-existent. However, our study found that teachers who reported that they were well informed about eye health indicated having health activities such as vision screening and oral health in their schools at some point, suggesting that these activities were offered together. These activities were endorsed under the school health system and should be successfully implemented if the Swaziland children health care system has to improve. In addition, there is a need for vision screening programmes to be accompanied by eye health education and campaigns for effective spread of information and ensuring teachers and children are well informed as all three activities cannot be separated. It is therefore suggested that the Swaziland government looks at creative methods of re-enacting and successfully implementing the school health programme, to ensure that all relevant health services, including eye care, are provided. Re-defining the roles of the Education and Health Ministries will eliminate the belief of the school health programme as the responsibility of the Health Ministry's only, and needs to include relevant stake holders and have access to adequate national budget allocations.

Children with visual problems are afforded the opportunity to attend mainstream schools in Swaziland. This could be due to lack of spaces for enrolling children in 'special' schools, as there is only one school for the blind and visually impaired. Children with visual impairment need to be enrolled in schools that are designed to cater to their unique needs. Enrolling disabled children

in the so-called 'mainstream schools' may be detrimental and can further add to the stigma as some 'abled-bodied' children may tease them leading to social isolation and negative psychological effects. Gooding (2003) suggested that disabled children who were placed in 'mainstream schools' without the necessary support were more likely to drop out of school, including those who are visually impaired. It is therefore important to identify children with visual problems as early as possible so that parents can make appropriate choices for them, such as enrolling them in 'suitable' schools. It is therefore important to promote positive attitudes and beliefs in schools and communities towards interacting with visually impaired and blind children.

6.6.2 Teachers' knowledge about eye care

A few teachers indicated knowing about ophthalmic nurses and opticians, while several teachers knew about optometrists. This is an unexpected finding, as ophthalmic nurses are often the point of contact in many developing countries (such as Swaziland), with few having optometrists and ophthalmologists (Lewallen and Courtright, 2001; Gilbert et al, 2008; Jadoon et al, 2007). In a country with a weak eye health system, there is a need for teachers to be informed about the different eye health professionals, their lack of knowledge possibly being due to no instruction being provided during their teachers training, as well as the ineffectiveness of the school health programme. Awareness programmes about child eye health and available services, specifying the roles of the different eye care practitioners, could be conducted using the media and school health activities.

Teachers were aware of the existence of facilities for the blind, which will enable them to advise parents to send their children to the relevant school if they are either visually impaired or blind. Less than half (48.2%) of the teachers were aware of the special needs for albino children, with few reporting that they advise albino children to sit in front of the class and give them extra time to complete tasks. In addition, teachers felt that protection from the sunlight was more important than being visually corrected with spectacles. All these suggest that teachers do not have adequate knowledge about the needs of albino children. Furthermore, teachers who reported that they attended workshops were found to be less informed about eye health, suggesting a possible limited scope in these workshops or possibly not being conducted periodically to ensure the teachers are kept well abreast of new information. These results are similar to teachers in Port Harcourt,

Nigeria, who reported poor knowledge about childhood vision disorders, such as albino, citing lack of training in their teaching curriculum (Tabansi et al, 2009). Therefore, teachers need to have adequate knowledge about holistic management of an albino child, including vision, environmental protection and classroom settings, which needs to be incorporated in their scope of undergraduate training. Providing continued support from eye health professionals for teachers and investing in eye health education in schools will ensure more children with visual special needs are reached by eye health services to eliminate the barriers to learning.

A high number (79%) of teachers were knowledgeable about correcting refractive errors, which may be due to the prioritisation of refractive services by government eye clinics. This could also indicate that spectacle correction is still the most common and preferred way of RE correction. Teachers who indicated being well informed and not well informed about eye health reported that eye drops can be used to correct RE. This highlights that regardless of the RE being prioritized, many teachers remain uninformed compared to the high number who indicated being knowledgeable, suggesting the need to ensure that teachers are trained about eye health and the school health programme.

Unlike the situation in other developing countries (Misra and Baxi, 2012; Tabansi et al, 2009), vision screening before commencing schooling is not a requirement in Swaziland, possibly due to the ineffective school health programme and the lack of public sector eye clinics. Therefore, recommendations need be made to formulate eye health guidelines that include RE, as it has been shown that it is easily correctable with a pair of spectacles. This will also advocate for improving the teacher's knowledge and identifying children with visual disorders in a classroom setting. Many teachers generally agreed that there was a lack of vision screening in schools, which results in children with visual problems being unidentified for timely referrals to appropriate care facilities. Gilbert and Foster (2001) further reiterated the importance of ongoing monitoring for those who have been given correction in the form of glasses or contact lenses. Very few schools had eye health professionals visiting them during the study period, indicating that vision screening was not prioritized, possibly due to the lack of human resources or relevant eye care policies. The lack of vision screening services results in a significant number of children without appropriate refractive correction and/or referrals to other eye care services. Partnerships between public-

private involving NGOs and or mission faith based services are necessary to strengthen intervention efforts as well as the referral system in school health programmes.

The teachers were also aware of the importance of adequate lighting in a class room setting to enhance performance, with a significant number (21%) not being aware of difficulties encountered by visually impaired children. This points to the need for more emphasis to be placed on providing further education and training on rehabilitation services, with RE and VAD reported to be among the most common causes of visual impairment in children particularly, in Africans (Alene and Abebe, 2000; Lewallen and Courtright, 2001; Policy brief, 2011; Guidelines for School Eye Health for the Eastern Mediterranean Region, 2009). It is therefore encouraging to note that a significant number of teachers were aware of these serious sight-threatening conditions. These results could be due to the fact that RE usually present with symptoms that affect studying, and teachers are able to see their manifestations in class. As conditions such as onchocerciasis and trachoma have been completely eradicated in Swaziland, it is assumed that children who present with these conditions will be identified by the teachers and referred for further appropriate care and management. For example, those with RE can be referred to eye care professionals for spectacles and those with VAD can be referred to the local clinic for vaccinations or other Vitamin A supplementation, as children usually receive vaccination against VAD at early age to prevent blindness.

Although the teachers' curriculum in Swaziland emphasises general health issues of children, particularly in the psychology module, the majority (90.1%) were aware of the general signs and symptoms of eye conditions. However, the curriculum does not adequately address eye conditions and there needs to be teacher training and workshops to address these. Teacher training and knowledge of eye conditions showed that 17.5% of teachers have never heard of any of the eye conditions affecting children. Although the exact reasons for this observation is not immediately clear, it could be due to the fact that teacher training differs across the country. Those who indicated that they were well informed about eye health identified RE, congenital cataract and VAD as known conditions. These are priority conditions that cause visual impairment and blindness. Ideally, the curriculum for training should be expanded to cover all aspects of eye care affecting children.

The mainstream media, such as newspaper, radio and television, were the main sources from where teachers received information about children's eye health. As suggested by Muller et al. (2007), this type of media plays an important role in spreading information about health. Only 27% of the teachers indicated that they received information about child eye health from their training. There is therefore a need for continued workshops to keep them abreast of visual problems that children may experience in the class room setting. Sudhan et al (2009) highlighted ways in which workshops can be conducted for teachers and included: short course sessions, distance learning utilizing newsletters, recorded video lectures and manuals. Friends who are knowledgeable about eye conditions were also reported by some teachers to be a source of information about children's eye conditions. It is noteworthy that health professionals were not reported as the main source of eye conditions by many teachers. These results highlight the lack of school screening conducted by health professionals in schools possibly due to lack of human resources. Therefore, teachers can be trained to conduct these important screenings in schools in order to identify children with visual problems. Korani et al (2015) in India recommended that teachers be trained by eye health professionals about the visual conditions that children experience and the consequences of not managing them appropriately. Realistic involvement of the local public health or eye health facilities in planning for effective school eye health programme as an intervention strategy that is sustainable with referral protocols is warranted to achieve the desired results of teachers being eye health literate and accessible to children.

Eye health is not only about detecting signs and symptoms of eye conditions but also about engaging in best practices by offering proper advice and referral. Although referring children is not an economic burden to the teacher but to the parent, none of the teachers who indicated being well informed about eye health referred children to private optometrists' but to public facilities to receive eye health care. This may suggest that many rely on public health facilities for general and eye health. Few teachers referred children to traditional healers, this is a positive finding, as it reduces the risk of children using traditional remedies, which can, and do, lead to blindness (Oduntan and Raliavhenga, 2001). Although many teachers indicated being informed about eye health, a significant percentage indicated inadequate knowledge about certain eye health conditions and their possible consequences. This statement is supported by the fact that they recommended sleeping or washing of the face to 'get rid' of an eye condition. A high proportion

of teachers were unsure if children in their classes had squints or not. Squints are usually noticeable with a naked eye, and this finding could suggest that teachers were not aware of what a squint is and many children with this condition may be left undetected, resulting in amblyopia. Cooperation between the Ministries of Education and Health in curriculum development on the epidemiology of local eye conditions in children, adults and common condition in different age group need to be embedded in the school curriculum and school eye health programme, while referral system is essential.

The long period (over 5 years) taken by eye health professionals to visit schools means that those in need of urgent eye care or any other health related issues may not receive appropriate health or eye care timeously, particularly those in rural areas. The delayed visits by eye health professionals can be ameliorated by training of teachers as 'vision screeners'. This training has been adopted in developing countries such as India, and has proven to be helpful in reducing the workload of eye health professionals (Korani et al, 2015). A significant percentage of teachers indicated that there was an absence or they were unsure of ophthalmic services in their areas. This could be due to the fact that qualified eye care personnel in the clinics where ophthalmic services are reported to be offered are not available or are occupied by community health workers. Teachers in schools without a clinic in the surrounding area reported to be well informed compared to those who had clinics. This highlights a lack of outreach programmes and spread of eye health information outside the clinic walls due to inadequate eye health personnel. Teachers reported that they had not encountered children dropping out of school due to visual problems while others said that they did. This may indicate that they are not aware of the reasons for children dropping out, and that the school does not follow up on those who do not return.

Global initiatives on the prevention of visual impairment and blindness list refractive errors as one of their priority conditions (Dandona and, Dandona, 2006). However, our study showed that most teachers reported refractive errors as not being a serious condition among children. This result confirms that although refractive errors have been reported to be significant causes of vision impairment in children, they are relatively rare in African children (Wedner et al, 2008).

Many teachers were unsure of whether children should wear glasses or not, which implies that they may not reinforce wearing of glasses in children who need to wear them all the time. Perceptions about wearing glasses varied, with teachers differing in the opinions, believing that it will both negatively and positively impact on the children's education, these results being similar to those reported by Wedner et al (2008). Proper induction for teachers is important to change their perception about wearing glasses to enable them to teach children about the benefits of using them. Moreover, eye health education focused on parents/guardians and teachers' communication on the use of spectacles by children is essential.

6.6.3 Teachers' practices about eye care

Many teachers indicated that they advised parents to take their children for vision testing when they complained of headaches while looking at the board or when reading. This is good advice, as it will afford the children the opportunity to have comprehensive eye examinations. In ideal situations, referring children to school health services could be a better option. However, due to the current poor state of the school health programme, there are no successful school health services in Swaziland. School health programmes used successfully by many countries, such as South Africa, need to be adopted in Swaziland to ensure that they respond to the needs of the children. The low number of children reported to be wearing spectacles could be due to the fact that there are very few children with refractive errors. The majority of the teachers referred children to public facilities, which were accessed by the majority of the people in the study area. Therefore, it is important to improve coordination of the school health programme between partnerships and stakeholders both at national and regional levels. These partnerships can be extended to international partners to eliminate visual problems among children in the public education system.

6.7 Eye health professionals' knowledge and practices about child eye health care

Eye health professionals as implementers of guidelines and policies are responsible for ensuring that children receive appropriate ophthalmic services either at school or at public eye care facilities. Their experience about public eye health services for children and the daily challenges they encounter renders them as key informants to identify barriers influencing accessibility. Therefore,

eye care professionals were required for addressing Objectives 4 by determining their knowledge and practices about child eye health care in the study.

6.7.1 Demographic profiles

The majority of eye care professionals were females, which could be due to the fact that the majority of eye health professionals who responded were ophthalmic nurses, with nursing being a female-dominated profession in Swaziland. Many eye care practitioners had access to social and mainstream media and these platforms can be utilized for sharing information, such as new cases seen in clinical settings, emerging research in eye health and distributing eye heath information. In 2008 the Central Statistical Office and Macro International reported that 97% of the population in Swaziland is African which is in line with the race group working in the public service. The majority of the eye care professionals' family members did not wear spectacles, which could be due the fact that their children have had eye examinations and did not need spectacles, and none of the children were reported to be blind or visually disabled. Many eye care professionals took less time to reach the nearest eye doctor or optometrist. This may be attributed to the fact that most are provided with accommodation within the vicinity of the hospital premises. This result could also have been influenced by the fact that these professionals used private transport with a few using buses and walking to the nearest eye care facility.

6.7.2 Eye health professionals' knowledge about eye care and services

The eye health professionals reported a lack of national paediatric referral guidelines and standard paediatric ophthalmic practice guidelines. The lack of information on epidemiological data on childhood eye conditions in the country impacts negatively on children, as no promotive and preventative initiatives can be implemented. This may be as a result of the poorly drafted National Health Policy (2006), which, in its current state, does not provide adequate information to develop an eye health care policy for the levels of services. Borrel et al (2013) suggested that poor countries struggle to advance better health policies, suggesting the need for health education in schools. Eye health professionals reported that refractive services were prioritized over other, services such as rehabilitation and education, which may be due to the chronic shortage of skilled personnel and equipped clinics that rehabilitation services require. This could also be due to the fact that refractive services are the dominant services provided to children. The development of an eye

health policy integrating services, human resource recruitment and equipment is warranted. Furthermore, there is a need to formulate a professional association/board for eye health professionals to take the lead on eye health issues in the country.

Access to any health care system is more likely to be complex (Frazer and Kleinstein, 2009; MacKinney et al, 2014), hence out of pocket payments due to lack of sufficient health insurance may influence the decision to seek eye care. The low funding from NGOs, missions and government, as indicated by the respondents, may not only reflect that eye health care is not prioritized, but also show the lack of information on eye conditions affecting children in the country. This therefore impacts negatively on children living with visual disabilities due to limited access to appropriate ophthalmic services offered at clinic level and outreach programmes. Njepuome et al (2012) also suggested that the lack of finances and human resource to perform the necessary procedures are major challenges in developing countries. The respondents acknowledged that the lack of insurance schemes for child eye care services hinders access to ophthalmic facilities, as eye care interventions are expensive because treatment sometimes requires multidisciplinary interventions. This therefore may prompt parents with children suffering from chronic eye conditions or in need of ophthalmic services to seek intervention elsewhere (traditional healer) than at eye health facilities, because they are expected to pay at every visit when taking children for vision testing. The lack of government policies, particularly in developing countries, contributes to the unaffordability of eye care services (Frazier and Kleinstein, 2009; Shirima and Geneau, 2006). These issues need to be urgently addressed through eye health education for parents and children by the Health Ministry, and innovative approaches explored to ensure sustainable funding for child eye health care needs. A joint venture including the government, NGOs and private sector is necessary for scaling up initiatives that will ensure children access eye health services without their parents being burdened with costs of care. Moreover, insurance schemes need to be made available for children needing tertiary services, particularly across the border in South Africa, for which they will have to pay.

The lack of data on childhood blindness leads to poor planning, as indicated in a report by Gilbert et al (1993), to identify what most children present with and its consequences, thereby highlighting the different levels of socioeconomic status and health care provision. The Swaziland government

needs to prioritize eye health care by advocating research and training of eye health professionals, which will provide evidence based data to plan for improving children's eye health visual status. The finding on monitoring indicators of paediatric services in the study reiterates the point that refractive services are given priority over other ophthalmic services. However, these findings highlight that eye clinics use different indicators for monitoring purposes, which has shortcomings, as other indicators are ignored. Studies investigating the barriers to eye health care have identified the cost of the actual operation, accessibility and knowledge of services, cultural and social barriers, as well as trust in outcome of the operation (Jadoon et al, 2007; Sapkota et al, 2010), these results being similar to those of the current study.

The results showed that poor and rural children had limited access to eye health. Madden et al (2002) also reported that people from rural areas and low income families experience low access to eye health facilities, and are more exposed to eye diseases that cause visual impairment. This is compounded by the lack of eye health policy to guide eye health services delivery in the Swaziland. Jones (2000) reiterated that some countries have drafted policies on disabled children that are enshrined in their constitutions, however, these policies are not effectively implemented, because children are expected to pay to gain access to health facilities. Forming committee to source funding and ensure technical commitment to eliminate visual impairment and blindness in children is therefore warranted.

In 2012, Pons et al found that children seen at one of the clinics in Swaziland presented with childhood blinding conditions such as RE and VAD. The eye health professionals in the current study indicated allergic conjunctivitis as being most common other than RE and VAD. This may indicate the low RE prevalence in African countries, as reported by Wedner et al (2008), as well as the reduced levels of VAD, with most children presenting to eye clinics having been vaccinated at an early age. Other eye injuries and congenital cataracts were reported by the respondents highlighting the need to conduct workshops on eye health for eye health practitioners to close the knowledge -practices gap among them on priority conditions and their management, as well as to improve service delivery.

The respondents cited the use of awareness campaigns as one of the most effective strategy to prevent childhood blinding diseases. It is therefore critical to identify the relevant media to be utilized which will enable parents and children in rural and remote areas to be reached. It is expected that with the lack of eye health personnel and equipment eye clinics were reported to be failing in addressing childhood blinding diseases which is similar to reports by Gilbert et al (2008) and Jadoon et al (2007). The negative consequences expected in such clinic conditions may extend from misdiagnoses of children, providing wrong advice and prescribing inappropriate medication. The varying views on when children should present for eye examination represents a barrier to eye health. There may be a gap in knowledge and practice among the eye health practitioners as some may not know what to say or do when a child presents to the clinic. The lack of knowledge may lead to eye health practitioners not following paediatric clinical guidelines when attending to children. Gaps on awareness and knowledge about clinical or preventative interventions were also noted by Pakenham-Walsh and Bukachi (2009). Formulating an eye health signatory body to advance CPD programmes and foster compliance on minimum standards for children's examination appears paramount. Demanding tasks can cause visual problems as children utilize the sense of sight the most in school. Salomao et al (2008) reported that the more academic work done and the high expectations on educational achievement increase the risk of myopia development. Developing strategies to inform eye health practitioners on the causes of poor vision is therefore essential.

The provision of corrective measures to children has been highlighted in many reports, especially in developed countries (Congdon et al, 2008). Some may argue that it is not correct to prescribe glasses to children as their eyes are still not fully grown. Consequently, those that have visual impairment will live with it for many years before it is identified. An important issue raised by eye care professionals was that they felt that they were not well informed about eye health problems. Frazier and Kleinstein (2009) also reported in their study that some eye health practitioners did not know what needed to be done when children present to the hospital. This suggests the need for capacitating the current eye health workforce through CPD programmes.

6.7.3 Eye care professionals' practices about eye care

Resource constraints including personnel and equipment are scarce in the country which hinders the provision of outreach programmes in communities and public schools. This is prone to have negative impact as it disadvantages children living in poorly resourced areas for accessing eye health services timeously. Of concern, is that the frequency of conducting outreach programmes was very low as a result of resource constraints as reported by eye health professionals who indicated being involved in such activities which further compromise timeous intervention. Decentralizing eye health services with equitable staff deployment to areas where eye health services are not available is essential and health workers who understand the regional constructs of the community they serve can be roped in to conduct eye health education in communities. The absence of VAD outreach programmes as reported by eye health professionals may increase mortality rate and corneal blindness which aligns with a report by Lewallen and Courtright (2001) highlighting that poor countries fail to identify VAD deficient children and provide enough immunization to prevent the disease. Therefore, understanding the socioeconomic status, health resource constraints which is prone to dividing aid for the eradication of VAD is paramount. Fortunately, all issues pertaining to the prevention and child integrated immunization are enshrined in the Sustainable Development Goals (SGDs) for children as priorities with the hope that no child will go blind from VAD in Swaziland.

Most eye care professionals reported that they were not involved in training teachers to identify, screen and support children with visual impairment. Resource constraints such as personnel and equipment are the main factors contributing to the non-involvement of health staff in teachers training. The Education and Health Ministries need to prioritise teacher training to help relieve eye health professionals' workload as suggested by Powell et al (2009) and Korani et al (2015). The majority of eye health professionals preferred the use of mainstream media and campaigns to reach out to parents on vision problems affecting their children. However, it is important to ensure that such initiatives reach all areas, particularly rural and remote areas.

6.8 Key similarities and differences in approach by parents, teachers' and eye health professionals

The common barrier identified among parents, teachers and eye health professionals is knowledge inadequacy about child eye health care associated with limited eye care facilities, cost and uneven distribution of services. Being educated or having highest level is not a determining factor for being knowledgeable about child eye health as inadequacies of teacher training, ineffective school health programme and lack of CPD programmes for eye health professionals were identified. Exposure to eye health facilities seem to be the main contributor to being knowledgeable about child eye health with refractive services dominating the public health system over other eye care services such as eye health education and low vision rehabilitation as all respondents included in the study indicated being informed about RE. Community visits and school outreach programmes lack eye health activities which is reaffirmed by the very few eye health professionals who indicated to be involved in such activities. In addition, the respondents appear to single out eye health education as a neglected subject as compared to vision screening and eye material distribution which is the main reason for the poor eye health literacy among the respondents. In addressing the poor eye health literacy, there seem to be consensus among teachers, parents and eye health professionals about main stream media campaigns as preferred ways to be utilized for spreading eye health information.

The key differences among the respondents included in the study were knowledge and practice based. Knowledge or educational barriers are prone to affect parents, teachers and eye health professionals, which significantly impacts their lack of understanding of the importance of early detection and intervention, as well as the best way eye health care can be provided to children. Our findings highlight the different opinions of the respondents, such as the varying views regarding when children should present for an eye examination, spectacle wear or be taken to or refereed to for an eye examination. This knowledge practice gap is underpinned by the inadequate promotive and preventative interventions associated with weak health systems, and results in poor performing health care service, suggesting the urgent need to improve eye health literacy among the population. Parents and teachers are in agreement with the existence and need for visually impaired or blind education facilities, and that such children must be afforded the opportunity to access education. However, the specified needs of these children to be properly educated remain

inadequate, exacerbated by negative perceptions among parents and inadequate eye health training for teachers. Contrary to parents and teacher's views, eye health professionals highlighted the biasness of access to education favouring normal sighted children over the visually impaired or blind, who should be well informed about the difficulties encountered in everyday life. Therefore, eye care providers, governments, public health agencies and NGOs have an important role to play at all levels of society about awareness of preventable causes of visual impairment and blindness among children, and thereby support the local, regional and national development of eye health care in Swaziland.

6.9 Conclusion

This study offers some insights into the level of knowledge and practices of teachers, parents and eye health professionals. Furthermore, it highlights the current levels of access, structural, operational and knowledge barriers for officials in health and education about child eye health care in Swaziland. The absence and inadequate implementation of relevant health and education policies has led to the poor eye care services that are characterized by an ineffective school health programme. Policy documents need to be updated to address the needs of the population they are intended to serve. In addition, health systems have an ethical responsibility to reduce health inequalities within the country. Identifying the required skills and knowledge, proper policy framework, as well as adequate sustainable funding for effective eye health is therefore essential.

The intended arenas, such as public schools and ophthalmic facilities, remained unreached where barriers to eye health and education usually occur. The lack of adequate knowledge by some teachers may contribute to the existing barriers for children to access eye health. To address this, parents need to be informed about basic child eye health in order to seek appropriate care promptly. Priority should be given to facilities situated in rural areas, as they face the possibility of poorly rendered services. Redressing neglected aspects of eye health, such as health literacy, awareness campaigns and school health programmes, appears essential. The equitable distribution of eye health services between rural and urban areas in line with the Vision 2020 recommendations is warranted. Officials in the Health and Education Ministries need to be capacitated to develop teacher training curriculum that include eye and relevant health and education policies to be utilized in the school health programme.

CHAPTER 7: CHILD EYE HEALTH ACCESS FRAMEWORK

7. 1 Introduction

This chapter presents the CHILD EYE HEALTH ACCESS FRAMEWORK which was developed as a product of this study. I reviewed Swaziland's school health programme and health system documents, obtained the opinions of relevant stakeholders (Ministries of Health and Education officials, parents, teachers and eye health professionals), identified theoretical models to guide the contents and consulted the eye health care frameworks of neighbouring countries with similar resource limitations. The framework is underpinned by the **fit model** which was originally proposed by Penchansky (1977), the **barrier focused framework** by Penchansky and Thomas (1981) and later expanded **access framework** by Aday and Ewe (1997). Attention was focused on factors relating to patient satisfaction, provider practice patterns and service utilization derived from **Penchansky's elements of access** to determine the supply and demand of access to eye health care, as they are assumed to be influenced by access variations (MacKinney et al, 2014; Levesque et al, 2013; Scheffler et al, 2015). Barriers to healthcare utilization by acknowledging individual socio-economic status, such as medical aid, income, source of care and placing particular emphasis on **access and health outcome** as how the two aspects relate to each other was taken into account. (Slifkin, 2002; Davidson et al, 2004; Balabanova et al, 2007). The 'need' for care, 'predisposing' characteristics of an individual, and 'enabling' structural characteristics were also viewed as part of the core for conceptualizing the framework (Rickett and Goldsmith, 2005; Anderson et al, 2002). The quantitative (questionnaires) and qualitative (interviews) data, as well as review of documents were triangulated to identify the gaps and develop the draft access framework. The draft framework was validated using the Delphi technique to secure experts' input and comments.

The intention of the Swaziland Eye Health Access Framework developed in this study is to identify and address barriers to care and issues of structural vulnerability to enable all children to have access to eye health care. The framework was informed by child eye health frameworks of neighbouring countries, with similar socioeconomic profiles, to ensure applicability in low resource settings. Taking cognizance of key barriers to eye health care among children in the

public education system in Swaziland, the framework addresses ways to scale up interventions that are already in place and introduces new aspects in areas that were identified as lacking.

The framework is intended to be used by the Swaziland Ministries of Health and Education as a tool that will inform policy and planning of child eye health care. The study identified the absence of an eye health policy and various barriers to access in both the health and education sectors. It further identified factors that could potentially hamper the successful implementation of the eye health framework and made recommendations to address these in the previous chapter. As this is the first framework developed for Swaziland, it is therefore suggested that the government of Swaziland adopt the developed framework as it will be useful in assisting policymakers to create and implement effective child eye health plans in the country. Ideally, the framework should be owned by the Ministry of Health but, if implemented according to its intent, will benefit the Education Ministry, teachers, eye health professionals and parents in Swaziland. The overall structure of the developed framework is presented diagrammatically in Figure 7.1 and explained in a brief narrative thereafter. Table 7.1 is designed to serve as a guide for implementation as it contains actions and recommendations which can be used at management level after the policy is in place and the programmes are rolled out.

CHILD EYE HEALTH ACCESS FRAMEWORK

NATIONAL POLICY → **HEALTH: Eye health services** → **EDUCATION: School health**

PLANNING

ACCESS (Universal coverage) | **AFFORDABILITY** | **LEADERSHIP AND MANAGEMENT** | **SUSTAINABILITY**

EYECARE FACILITIES

Primary- PEC clinics for screening of new-borns

Secondary- Eye examination by optometrists, outreach programmes

Tertiary- Complicated procedures

RESOURCES

Infrastructure

Equipment

Daily consumables

Human resource

Spectacle laboratory

AFFORDABILITY

Free Access for Children

Ministry of Finance (Fiscus), Partnerships with NGOs/other relevant stakeholders

LEADERSHIP AND MANAGEMENT

National eye coordinator

Regional manager

Clinic HODs

Regional education administrator for school health

SUSTAINABILITY

Quality Assurance Reviews/ Audits

SCHOOL HEALTH

Human resources

Equipment

Teacher's 'screening

Eye health education

Primary

Ophthalmic nurses

PHC Nurses & School Health Nurses

Community health workers

Traditional healers

Administrators

Secondary

Cataract surgeon/Eye Medical officer

Optometrists

Ophthalmic nurses

Dispensing Opticians

Administrators

Tertiary

Ophthalmologists

Optometrists

Ophthalmic nurses

Dispensing Opticians

Administrators

7.2 National Policy

In order to have child eye health care entrenched within the national Ministry of Health in Swaziland, national legislation and regulations related to service delivery, that also informs policy in the Ministry of Education, needs to be in place. This is an enabling factor for the development and implementation of appropriate child eye health strategies. Derose et al (2011) stress that eye health policies, as informed by their public health role, directly impact on health system delivery. They further state that the policy guides the availability of relevant human and other resources needed to implement the policies and enable accessible and affordable services to be delivered. Numerous authors concur that health care planning forming part of well-designed policies need to respond to the scarcity of resources, such as skilled workers in eye care (Green, 1995; Wan, 1995; Glendinning, 2003). The indicators under the eye health policy should form the basis for restructuring service delivery for the targeted populations to ensure positive eye health seeking behaviour towards promotive and preventive health practices. There should also be opportunities for all stakeholders such as eye health workers, parents, NGO's and civic organizations to make input into the policies as they are developed.

7.3 Planning (Implementation)

7.3.1 Access

Access needs to be viewed in terms of those children who need to enter the service delivery system to receive eye health care. It needs to additionally be structured in a manner that parents may deem suitable in both access and quality with efforts also made to ensure that there is adequate usage of the services. The use of the services is impacted upon by the proximity of the health facility, family support, associated costs, perception of services offered and organizational structure of the eye health facility (Derose et al, 2011; Balabanova et al, 2007). PEC clinics need to ensure that children are screened at least twice before starting school to curb preventable blinding diseases at an early stage. There should also be adequate training or re-training of eye health workers as social solidarity, a building block of the role of public health (Derose et al, 2011), is not solely concerned with having eye care providers, but also having people who are able to render services with dedication, including voluntary outreach programmes.

The organizational structure, continuum of eye health care services and referral pathways in the delivery system are essential to ensure that children adhere to referrals and follow-up assessments for eye conditions that are detected in school or at PHC clinics that lack comprehensive eye care services. Referral pathways between the three levels need to be formed for the smooth functioning of the eye clinics, and to avoid patients bypassing the PHC level and over-burdening the secondary/tertiary level facilities. To enhance referral pathways, a collaboration between the Health and Education Ministries needs to be implemented and properly structured to ensure children diagnosed with visual impairment or blindness are placed in special schools.

The school health programme needs to be developed in a manner that enables the services delivered to be strengthened in quality, relevance, equity and efficiency. Workshops should be held to consider various scenarios in which the programme could be implemented and which in turn could affect its implementation. Successful programmes require a well-structured public health system that includes effective eye health interventions and public health agencies that promote access to eye health services for children in the public education system. The school health programme will address the visual deficits not detected at an early age as well as those older scholars who have previously been denied the opportunity to access eye health services. Additionally, there should be a continuous attempt to improve parent's health seeking behaviour and beliefs in order to reshape the community norms (Schaumberg et al, 2000).

7.3.2 Funding

There is a need to ensure that services are affordable to all children in the public sector, which requires adequate budget allocations to be made by the Finance Ministry. An attempt should be made to provide children with free eye care services. If this is a challenge in Swaziland, they should adopt models from other developing nations where strategic partnerships are established with NGOs and other relevant eye health stakeholders to assist with funding. It is acknowledged that multiple strategies are needed as multidisciplinary approaches required in child health care interventions may make it expensive. Incorporating eye health care under general non-communicable diseases may also ensure that the funds are made available and are used for the intended projects.

7.3.3 Leadership and management

Co-operation between national leadership and regional managers will ensure there is coherence in eye health policy and implementation. The government should ensure that leaders and managers with relevant skills and competencies are selected and that ongoing training is afforded to align programmes with national and international developments in eye health care. Investing in eye health research will enable policy designers and health care planners to make informed decisions to achieve equity and explore potential new technologies such as telemedicine to improve access to specialist eye care in rural and remote areas in Swaziland. A WHO vision 2020 guideline has been adopted and a proposal of a 5 year projection plan of eye health care team structure required for adequate eye services is shown in Table 7.1.

7.3.4 Sustainability

In order for programmes to be sustainable, they need to be of a high quality. The attainment and maintenance of quality requires periodic review and evaluations. Monitoring and evaluations need to focus on quality in general and include specific aspects such as service coverage, access, human and material resources, cost-effectiveness, support services, the impact on learners' progress and sustainability of health services.

Table 7.1: Key areas of action and recommendations

Key area of action	Responsible persons	Recommendations
Legislation	National Government	- National Health leads and includes Education, other relevant stakeholders. Non-discriminatory policies
Leadership and management	MOSHW and MoTE, NGOs	- Committed, capacitated managers and with required knowledge, skills and experience in eye health - Policy reviews in 5 year intervals - Facility audits 3 year intervals - School health Audits 3 year intervals - Quality assurance, audits, reviews conducted by independent international specialists in the respective fields
Service delivery	MOSHW, MoTE, NGOs, Relevant stakeholders	- Adopt multi-disciplinary approaches to broaden the workforce base and integrate eye care into PHC chronic disease management programs - **Primary Level Facilities (according to catchment areas including schools)** - 3 Ophthalmic nurses in each clinic - Community Health Workers (health education, case finders, basic sign symptom identification, data collection) - Administrators - **Secondary Level Facilities (one in each region)** - Referral centre for refractive conditions and ocular diseases - 2 Cataract surgeon/Medical officers in each hospital - 2 Optometrists - 1 Occupational Therapist - 4 Ophthalmic nurses - 1 Dispensing Optician - Administrators - Develop sustainable eye care protocols for providing periodic outreach services to PHC clinics - **Tertiary (at least 2 in the country)** - 2 Ophthalmologists in each hospital - 3 Optometrists - 6 Ophthalmic nurses - 1 Dispensing Optician - Administrators **GENERAL** - Presence of essential ophthalmic drug list required - Patient provider models need to be identified that accommodate cultural beliefs, language, attitudes, community health workers and the eye health providers understand the regional constructs of the communities they serve - CPD programmes for capacitating eye health professionals in the broader aspects of eye health - Research undertaken at all the levels of care - Formulate eye health signatory body to oversee eye care service provision

Funding	MOSHOW, NGOs, Relevant stakeholders	-	Innovative approaches to fund complicated procedures need to be explored (sponsors from corporate companies and NGOs)
	Government	- -	Social welfare support and poverty alleviation strategies Policy on children issues are done under the office of the Deputy Prime Minister, hence there should a liaison between the office that deals with policy and the implementation offices (Education and Health)
School Health	MOSHW, MoTE, NGOs, Relevant stakeholders	- - - - - -	Need of a clearly defined school health package that incorporates eye health, joint policy formulation Link the endemic diseases affecting children eyes to comprehensive school eye programme and appropriate referral systems Teachers training at varsity or training colleges Proper communication linkages with parents Monitor access, quality and equity regularly to ensure compliance and for future planning Invest in school infrastructure to improve enrollment of children with visual impairment and blindness
Eye health programmes	MOSHW, MoTE, NGOs	- - -	Linking of immunization with eye and hearing screening before admission in public schools Awareness campaigns (use of electronic devices, social media) Capacity building for parents/guardians, legal care-givers and local chiefs, teachers, nurses, eye health professionals, children, community health workers, traditional practitioners
Eye health professionals	MOSHW, NGOs	-	Training and education for teachers, PHC nurses, community health workers and traditional practitioners
Teachers		-	Vision screening with a Teacher Observation Check List and eye health education
PHC Nurses		-	Skills and equipment to screen children, the right attitudes for communicating with parents, and work in equipped community clinics or within school premises
Community Health Workers		-	Eye health education, case finding
Traditional practitioners		-	Curb variety of cultural beliefs in the communities, eye health education
Parents/guardians, legal care-givers and local chiefs		-	Involvement is required for the school health programme to be a success
Children		-	Healthy living behaviour, positive attitudes and health beliefs including of those living with visual disability

7.4 Proposed outcome of the framework

If the framework is utilized according to its intent with sufficient available resources, it will increase access and ensure continuity of care within the public health system for children in the country. The framework allows all relevant stakeholders to share the responsibility of reducing these barriers faced by children in the public education system in Swaziland, and can be utilized in projects aimed at developing eye health policies to improve eye health outcomes.

7.5 Limitations of the framework

The framework is provided on the understanding of a number of limitations:

- Swaziland has very limited resources to ensure that the purpose of the framework is achieved on its own due to financial and other resource constraints.
- Decentralisation of health services needs to be finalised and implemented for the framework to be effective provided the local systems are functional and support the concept.
- Weak public health systems mean that there is a lack of periodic monitoring and evaluations of public health programmes, which includes school health without proper key performance indicators being identified and implemented.

7.6 Conclusion

This is the first access framework document to be developed for child eye care in Swaziland and provides an opportunity to be a benchmark for other developing countries facing similar challenges. The guiding principles included in this framework are valuable in that they are aligned with those outlined in the global child health programme in terms of improving access to quality, cost effective eye and vision care.

The framework has been designed by reviewing and considering other medical care access frameworks, specifically those focusing on public health. Besides focusing on general health disparities and social determinants of health, it uniquely identifies aspects to be included for children to realize access to eye health through health education, vision screening and comprehensive examinations. It identifies a legislative plan, promotion of eye health information for children and free access to eye health care for all children as their basic right. Emphasis on

PHC/PEC and close collaboration between the Ministries of Education and Health is recommended. Available services with adequate resources and infrastructure, full cooperation and committed leadership will increase access to eye health care. In addition, for the framework to be successful cultural beliefs and attitudes need to be taken into account. Access and equitable eye health delivery for all children, particularly the disadvantaged requires establishment of a balance between eye care demands and service provision. It further prioritizes the establishment and utilization of PEC clinics, which will become reference points to manage children presenting with ophthalmic conditions in schools. The demand-supply barriers to eye health usually will be addressed when interventions are scaled-up and applied in combination, as no single aspect addresses all barriers in order for eye health services to be accessible, affordable and acceptable.

CHAPTER 8: CONCLUSION AND RECOMMENDATIONS

8.1 Introduction

This study was undertaken to investigate the barriers encountered by children within the Swaziland public health system in order to improve access to eye health services by developing an appropriate access framework that will address their specific needs. This chapter summarizes the key findings of the study and draw conclusions on the results of the research. The limitations and recommendations of the study are also discussed.

Although the number of children in Swaziland form a significant part (44%) of the overall population, challenges still remain regarding access to eye health. The poor health status of many of children impacts on their education, with infectious diseases contributing significantly to barriers to achieving optimal general and eye health as well as economic development. Visually disabled children are continuously denied their basic right as the infrastructure at school does not provide a conducive learning environment for them. At the moment, Swaziland does not have an eye health care policy to address the inadequate health budget, staff shortages, and eye care facilities that lack equipment and daily consumables, with the available school health document omitting eye health activities. It is within this context that the barriers to accessing eye health care were explored among children enrolled in the public education system and this information may be useful in the development of eye health policies in the country.

8.1.1 Objective 1. To undertake a desktop review of eye care policies in two neighboring countries with specific relation to child eye care

South Africa has national eye health guidelines that are supported by regulatory health signatories, which neither Mozambique nor Swaziland have. Access to and utilization of eye health services in these developing countries remains a challenge due to lack of implementation of the available health policies coupled with the neglect of eye health literacy, awareness campaigns and effective school health programmes. There is a need for quality assurance, as well as monitoring and evaluation systems to ensure quality service provision at all times and to improve where necessary.

Prioritizing promotive and preventive strategies over curative services through research and proper planning will have beneficial outcomes.

Swaziland has not invested in children's eye heath as other health projects are perceived as needing urgent attention. The school health document review shows that children's health needs are not given the necessary attention and is characterised by the absence of a proper functioning public health system resulting in certain aspects of school health being addressed while others are ignored (eye health). Prioritizing the implementation of policies is warranted after identifying the required skills and knowledge, proper policy framework as well as adequate sustainable funding for effective and efficient eye services. Duplicating the South African eye health care services in Swaziland may not be successful without taking into account the uniqueness of eye health challenges faced by children and the country's diverse cultures. Therefore, developing clear and focused eye health care strategies appropriate for Swaziland will improve access to eye health for children and introduce them to optimistic health habits that can last as long as they live.

8.1.2 Objective 2. To determine current levels and factors that impact on access to children from the perspective of health and education officials

Issues contributing to poor eye health services include outdated National Health Policy of 2006, absence of a referral system, poor management characterized by the lack of vision and strategy, inadequate knowledge about child eye care among officials, lack of infrastructure and skewed human resource as well as ineffective school programme. The unequal distribution of eye health services, the associated costs and effectiveness of services are significant barriers to eye health that impact negatively on children, specifically those living below the poverty line. This is not unique to health but to education as well due to the high school fees in schools that excludes most children from attending and benefiting in the school health programme. The introduction of FPE plays an important role in improving access, however, the visual disabled child continue to face considerable challenges due to limited schools for those who are visually impaired and the scarcity of skilled teachers. A well-coordinated and sustainable referral system linking children in rural communities to the highest level of eye care will ensure access to appropriate services timeously. The MOSHW needs to ensure that all managerial positions in the four regions and at the national

level are filed by experienced people with relevant qualifications in eye health care, and who are well are informed about preventative as well as rehabilitative services.

8.1.3 Objective 3. To determine the availability of eye care facilities and services for children

Evidence revealed by the clinical facility assessment is that eye care services in the country as a whole are still lacking. The poorly functioning supply chain and resulting lack of equipment and ophthalmic drugs in the majority of operating clinics accounts for the high failure of compliance by eye health professionals who are unable to adhere to the minimum required standards of assessing children and providing the relevant management. There is a need to focus on eye conditions other than RE for a holistic approach to child eye health, and to broaden the scope of practice to include contact lens fitting as well as expanding the low vision field. The focus should be based on primary health care services to ensure that compressive appropriate services are rendered, as these patients are usually referred to tertiary level in the absence of basic eye care at primary and secondary level. Training teachers to conduct vision screening in schools and communities will ensure that those children who would otherwise not be identified as having problems are referred to appropriate services. Outreach programmes need to be provided at schools and communities as a matter of urgency to prevent students from dropping out or struggling with their school work. A national guide to be used as a tool to analyze the range of clinical services, human resources, health technology, physical infrastructure, medical supplies and management required is warranted.

8.1.4 Objective 4. To determine parents, teachers' and eye care professionals' knowledge and practices about child eye health care

The findings of the study suggest the need for parents to be informed about basic child eye health in order to seek appropriate care promptly. Eye health education is a neglected subject as both educated and uneducated parents showed poor knowledge about child eye care. These suggest the need for all parents in communities to be well informed about child eye health. As many people rely on public eye health facilities, the government must ensure that quality ophthalmic services are rendered in all public eye clinic to curb any preferences for facilities which leads to disregarding referral protocols. Inadequate knowledge about child eye health shown by some teachers is a cause for concern, while others demonstrated being informed, although it appears to

be insufficient to address the broader issues of child eye health. Teachers need adequate training and understanding about eye health, including visual disability of children, to ensure that information is shared in a way that does not discriminate the disabled child during learning and in order to remove barriers in the teaching system.

The survey of eye health professionals offers a situational analysis of the eye health delivery system, challenges encountered, lack of knowledge, barriers to ophthalmic services and suggestions on how public eye health services can be improved. Drafting guidelines on eye health and adhering to them is important to improve service delivery. Conducting research and identifying monitoring indicators for regular evaluations may directly improve eye health. Knowledge or education barriers about eye health are broad, emanating from a weak health system, inadequacies of teacher training, ineffective school health programme and lack of CPD programmes undermines the importance of promotive and preventative interventions. While all the respondents agreed that the use of main stream media as a tool to address poor eye health literacy is important, it is necessary to investigate which are the most accessible, specifically among the poorest rural communities.

8.1.5 Objective 5. To develop and validate a child eye health framework for Swaziland

The framework advocates for a holistic approach to child eye health care in order to eliminate the isolation of eye health, as visual impairment can be linked to general health status and have impact on the social and physical wellbeing of children. It also advocates for a balance between the eye care demands and service provision to promote equitable access among children. It is therefore recommended that the framework be adopted by the government and translated into practice according to its intent as this information will be useful to the MOSHW, MoTE, eye health professionals and parents in Swaziland. However, this process involves the enactment of laws, and changes in the economic, political and social environment that may dilute the intention of the framework as result of tensions arising during policy implementation. Therefore, a cooperative venture of organizations and individuals is required to achieve the goal of eye health for all children. Thus, voluntary commitments, ownership of actions of individuals, holding institutions accountable as well as political obligations play a vital role in upholding the conditions for a healthy society.

8.2. Limitations

The limitations of this study included:

- The study only focused on access of children in the public education sector, and excluded private schools and those not enrolled at any institution.

- The study relied on responses from eye health professionals, teachers and parent's knowledge and practices. Factors such as satisfaction with the services provided and preference for private or public eye services were not included.

- The study proposes an access framework without fully examining the barriers to eye health policy formulation in a country without a functioning referral system.

- The study was conducted in two of the country's four regions, and due to the diversity in characteristics of different communities and other social determinants of health, the findings may not be generalized to the whole country.

- The sample of parents may not be a representative of all parents' views regarding children's eye health knowledge and practices.

- Additional questions could have been asked about the influence of culture, beliefs and attitudes on access to eye health services. However, this study focused on issues relating to service delivery from within the health system.

8.3 Strengths of the study

The study had the following strengths:

- This is the first study to investigate the barriers encountered by children within the health system in Swaziland, with the aim of improving access to eye health services through the development of appropriate policy guidelines or interventions that will address their specific needs.

- The study provides a generalized idea of the level of knowledge and practices of parents, teacher, eye health professionals, health and education officials in relation to eye health care affecting school children in the public education system in Swaziland.

- This is the first study to propose a framework to inform eye health policy with a particular focus on children in Swaziland.

8.4 Recommendations

Based on the limitations and findings of this study the following recommendations are made:

- Establish a national collaborative register about Swaziland's ocular conditions. This will assist in addressing visual impairment and blindness, and make it easier to identify the causes of these condition and implement the necessary promotive and preventive strategies.

- Develop a national eye health policy and update the country's health policy to influence eye health care delivery. Within the policy, develop programmes aimed at preventive and promotive eye health care to eliminate visual impairment and blindness among children

- Develop school health programme indicators and evaluation tools to monitor the progress made in eliminating visual impairment and blindness among children at national and regional levels.

- Conduct large surveys, preferably on a national basis, to provide sufficient data to increase public awareness and expedite appropriate measures to curb visual impairment and blindness among children.

- Investigate knowledge differences between urban and rural parents as well as teachers in terms of facilitators and barriers to eye health care among children.

- Investigate the impact of socio-economic classes of parents' knowledge about eye health compliance for their children.

- Conduct a similar study approach for children who are hearing impaired, as it may be difficult for teachers and parents to identify children have such challenges. Hence hearing impairment may be confused with visual impairment and the two may co-exist at the same time, making it necessary for a multidisciplinary approach when dealing with children.

8.5 Conclusion

Children's ocular health remains a neglected aspect of health care in Swaziland, with many families not being able to afford private eye care services. Public sector eye care services tend to be located in the few urban areas, which results in the many rural inhabitants not being able to access such care for persons of any age. With an increasing global focus on providing services to children, specifically through school health programmes in under-resource countries, Swaziland needs to take a collaborative approach to ensure that its children have access to eye care. However, in the absence of appropriate policies, strategies and frameworks to drive such an initiative, this is

unlikely to happen. It is therefore essential to ensure that the legislative frameworks are in place that give direction to what services need to be provided, where, by whom and at what cost. This needs to be supported by health promotion initiatives to make sure that the services are accessed at the desired point of delivery, and ensure that supply meets demand at the point of need. As a country with a high HIV/AIDS burden, high unemployment and low levels of school enrolment with higher dropout rates, it is essential that it maximizes all possible opportunities for its children to reach their full potential, and to become active citizens who contribute to the wellbeing of their families, communities and economy. However, it is also important for governments to make provision for its citizens to enjoy the best possible quality of life that it can afford, with health and education being central to this opportunity.

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APPENDICES

Appendix A

Letter to the Director of Health Services

PRIVATE BAG X54001
DURBAN
4000
SOUTH AFRICA
TEL: (031) 260-7111

University of
KwaZulu-Natal

Tel: +27 (0) 31 260 7352

COLLEGE OF HEALTH SCIENCES

Fax: +27(0)31 260 7666

WESTVILLE CAMPUS

THE DIRECTOR OF HEALTH SERVICES

Dear Sir/Madam

Re: Permission to conduct questionnaires in eye health facilities (Eye clinics)

I am a PhD student in optometry at the University of KwaZulu-Natal Westville. I am currently pursuing a research study entitled: "Barriers to eye health care among school going children in Swaziland: Towards the development of a framework for access to child eye health care".

The aim of this study is to identify the barriers to accessing child eye care services in Swaziland in order to develop a framework for access to child eye health care. Access to eye health services supports early intervention of potentially blinding conditions, with childhood blindness estimated to account for about four to five percent of the overall blindness globally. Visual impairment in children, has the potential to affect educational outcomes and limiting potential future employment. The lack of employment has serious socio-economic consequences in a country whose economy currently faces rising poverty with 40% of its population living under chronic poverty. Since children constitute a large percentage of Swaziland's future workforce, ensuring their visual well-being through access to eye health services is an important developmental goal. Therefore, it is important to investigate the barriers encountered by children within the health system, with an aim to improve access to eye health services through the development of appropriate policy guidelines or interventions that will address their specific needs. Non-

governmental organisations and other relevant stake holders will be approached to assist in strategizing to a successful to the implementation of child eye health in the country.

I therefore request permission to conduct the interviews among officials in the ministry, eye health workers and assess equipment in the eye clinics using a data flow facility assessment questionnaire. For further information you can contact my supervisors;

Dr VR Moodley

Email: moodleyvr@ukzn.ac.za

Tel: 031 260 7091

Dr KP Mashige

Email: mashigek@ukzn.ac.za

Tel: 031 260 7986

For any queries about the research study contact: The Biomedical Research Ethics Committee (BREC) at the University of KwaZulu-Natal

Email: BREC@ukzn.ac.za

Tel: 031-260 4769 or 031 260 1074

Thanking you in advance for your cooperation.

Yours faithfully

Velibanti Sukati (205500993)

University of KwaZulu-Natal

Discipline of Optometry, School of health Sciences

Email: mavegy@gmail.com

Cell: 076 1945 779/ (00268) 76815637

Appendix B

Letter to the Director of Education and training

PRIVATE BAG X54001
DURBAN
4000
SOUTH AFRICA
TEL: (031) 260-7111

University of KwaZulu-Natal

DISCIPLINE OF OPTOMETRY Tel: +27 (0) 31 260 7352

COLLEGE OF HEALTH SCIENCES Fax: +27 (0) 31 260 7666

WESTVILLE CAMPUS

THE DIRECTOR OF EDUCATION AND TRAINING

Dear Sir/Madam

Re: Permission to conduct questionnaires in public schools

I am a PhD student in optometry at the University of KwaZulu-Natal Westville. I am currently pursuing a research study entitled: "Barriers to eye health care among school going children in Swaziland: Towards the development of a framework for access to child eye health care".

The aim of this study is to identify the barriers to accessing child eye care services in Swaziland in order to develop a framework for access to child eye health care. Access to eye health services supports early intervention of potentially blinding conditions, with childhood blindness estimated to account for about four to five percent of the overall blindness globally. Visual impairment in children, has the potential to affect educational outcomes and limiting potential future employment. The lack of employment has serious socio-economic consequences in a country whose economy currently faces rising poverty with 40% of its population living under chronic poverty. Since children constitute a large percentage of Swaziland's future workforce, ensuring their visual well-being through access to eye health services is an important developmental goal. Therefore, it is important to investigate the barriers encountered by children within the health system, with an aim to improve access to eye health services through the development of appropriate policy guidelines or interventions that will address their specific needs.

I therefore request permission to conduct this study among teachers, parents of the children enrolling in the public education system and to conduct the interviews among officials in the ministry. The questions in the questionnaire will not cause any emotional discomfort to the subjects and they are not under any obligation to participate in the study and can withdraw at any time during the study. For further information you can contact my supervisors;

Dr. VR Moodley

 Email: moodleyvr@ukzn .ac.za

Tel: 031 260 7091

Dr KP Mashige

Email: mashigek@ukzn.ac.za

Tel: 031 260 7986

For any queries about the research study contact: The Biomedical Research Ethics Committee (BREC) at the University of KwaZulu-Natal

Email: BREC@ukzn.ac.za

Tel: 031-260 4769 or 031 260 1074

Thanking you in advance for your cooperation.

Yours faithfully

Velibanti Sukati (205500993)

University of KwaZulu-Natal

Discipline of Optometry

Email: mavegy@gmail.com

Cell: 076 1945 779/ (00268) 76815637

UNIVERSITY OF
KWAZULU-NATAL

INYUVESI
YAKWAZULU-NATALI

Information document for eye health professionals

Research title: Barriers to eye health care among school going children in Swaziland: Towards the development of a framework for access to child eye health care.

Dear Eye health professional

My name is Velibanti Sukati, a PhD student at the University of KwaZulu-Natal, Westville, Cell 0761945779/(00268)76815637 Email:mavegy@gmail.com.

You are being invited to consider participating in a study that involves research on barriers to eye health care among school going children in Swaziland. The purpose of the study will be to assess the barriers to eye health care among school going children in Swaziland: Towards the development of a framework for access to child eye health care. The study will involve structured interviews for health and education managers and responding questionnaires for teachers and parents.

There are no risks involved in this study. The questions in the questionnaire will not cause any emotional discomfort to the subjects. You are under no obligation to participate in the study and can withdraw at any time during the study, even after you have agreed to participate. All consent forms and data sheets will be secured under lock and key. Therefore to fulfill part of the study objectives you are requested to fill in the questionnaire that will take about 10-15 minutes.

Thanking you in advance for agreeing to fill in the questionnaire

In the event of any problems or concerns/questions you may contact the researcher at 0761945779/ (00268)76815637 or the UKZN Biomedical Research Ethics Committee, contact details as follows: Email: BREC@ukzn.ac.za

Tel: 031-260 4769 or 031 260 1074

For further information you can contact my supervisors;

Dr. VR Moodley

Email: moodleyvr@ukzn .ac.za

Tel: 031 260 7091

Dr KP Mashige

Email: mashigek@ukzn.ac.za

Tel: 031 260 7986

Barriers to eye health care among school going children in Swaziland: Towards the development of a framework for access to child eye health care

Consent form

Declaration by participant

I (Name)……………………………………………….hereby confirm that I have been requested to participate in a research study on barriers to eye health care among school going children in Swaziland. I have read the briefing document provided and the contents thereof which are written in a language with which I am fluent and comfortable. I have had a chance to ask questions and all my questions have been clearly addressed and I understand what my involvement in the study means.

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

I am aware that should I have any queries, or if I have questions about my rights as a research participant, I may contact the UKZN Biomedical Research Ethics Committee, on 031-260 4769 or 031 260 1074 or Mr V Sukati at 0761945779 or Dr. VR Moodley at 031 260 7091 or Dr KP Mashige at 031 260 7986.

_____   _____   _____

Signature of Participant   Date   Place
(Where applicable)

_____   _____   _____

Signature of Participant   Date   Place
(Where applicable)

Information document for teachers

Research title: Barriers to eye health care among school going children in Swaziland: Towards the development of a framework for access to child eye health care.

Dear Teacher

My name is Velibanti Sukati, a PhD student at the University of KwaZulu-Natal, Westville, Cell 0761945779/(00268)76815637 Email:mavegy@gmail.com.

You are being invited to consider participating in a study that involves research on barriers to eye health care among school going children in Swaziland. The purpose of the study will be to identify the barriers to access to eye care services towards developing an access framework for child eye health care in Swaziland. The study will involve structured interviews for health and education officials and responding questionnaires for eye health professionals and parents.

There are no risks involved in this study. The questions in the questionnaire will not cause any emotional discomfort to the subjects. You are under no obligation to participate in the study and can withdraw at any time during the study, even after you have agreed to participate. All consent forms and data sheets will be secured under lock and key. Therefore to fulfill part of the study objectives you are requested to fill in the questionnaire that will take about 10-15 minutes.

Thanking you in advance for agreeing to fill in the questionnaire

In the event of any problems or concerns/questions you may contact the researcher at 0761945779/ (00268)76815637 or the UKZN Biomedical Research Ethics Committee, contact details as follows: Email: BREC@ukzn.ac.za

Tel: 031-260 4769 or 031 260 1074

For further information you can contact my supervisors;

Dr. VR Moodley

Email: moodleyvr@ukzn .ac.za

Tel: 031 260 7091

Dr KP Mashige

Email: mashigek@ukzn.ac.za

Tel: 031 260 7986

Barriers to eye health care among school going children in Swaziland: Towards the development of a framework for access to child eye health care

Consent form

Declaration by participant

I (Name)……………………………………………….hereby confirm that I have been requested to participate in a research study on barriers to eye health care among school going children in Swaziland. I have read the briefing document provided and the contents thereof which are written in a language with which I am fluent and comfortable. I have had a chance to ask questions and all my questions have been clearly addressed and I understand what my involvement in the study means.

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_____   _____   _____

Signature of Participant   Date   Place
(Where applicable)

_____   _____   _____

Signature of Participant   Date   Place
(Where applicable)

Information document for parents

Research title: Barriers to eye health care among school going children in Swaziland: Towards the development of a framework for access to child eye health care.

Dear Parent/Guardian/Caregiver

My name is Velibanti Sukati, a PhD student at the University of KwaZulu-Natal, Westville, Cell 0761945779/(00268)76815637 Email:mavegy@gmail.com.

You are being invited to consider participating in a study that involves research on barriers to eye health care among school going children in Swaziland. The purpose of the study will be to identify the barriers to access to eye care services towards developing an access framework for child eye health care in Swaziland. The study will involve structured interviews for health and education officials and responding questionnaires for eye health professionals and teachers.

There are no risks involved in this study. The questions in the questionnaire will not cause any emotional discomfort to the subjects. You are under no obligation to participate in the study and can withdraw at any time during the study, even after you have agreed to participate. All consent forms and data sheets will be secured under lock and key. Therefore to fulfill part of the study objectives you are requested to fill in the questionnaire that will take about 10-15 minutes.

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For further information you can contact my supervisors;

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Email: moodleyvr@ukzn .ac.za

Tel: 031 260 7091

Dr KP Mashige

Email: mashigek@ukzn.ac.za

Tel: 031 260 7986

Barriers to eye health care among school going children in Swaziland: Towards the development of a framework for access to child eye health care

<div align="center">

Consent form
</div>

Declaration by participant

I (Name)……………………………………………….hereby confirm that I have been requested to participate in a research study on barriers to eye health care among school going children in Swaziland. I have read the briefing document provided and the contents thereof which are written in a language with which I am fluent and comfortable. I have had a chance to ask questions and all my questions have been clearly addressed and I understand what my involvement in the study means.

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_____   _____   _____

Signature of Participant   Date   Place
(Where applicable)

_____   _____   _____

Signature of Participant   Date   Place
(Where applicable)

Appendix F: Map showing Government Hospitals, Clinics and Health Centres in Swaziland
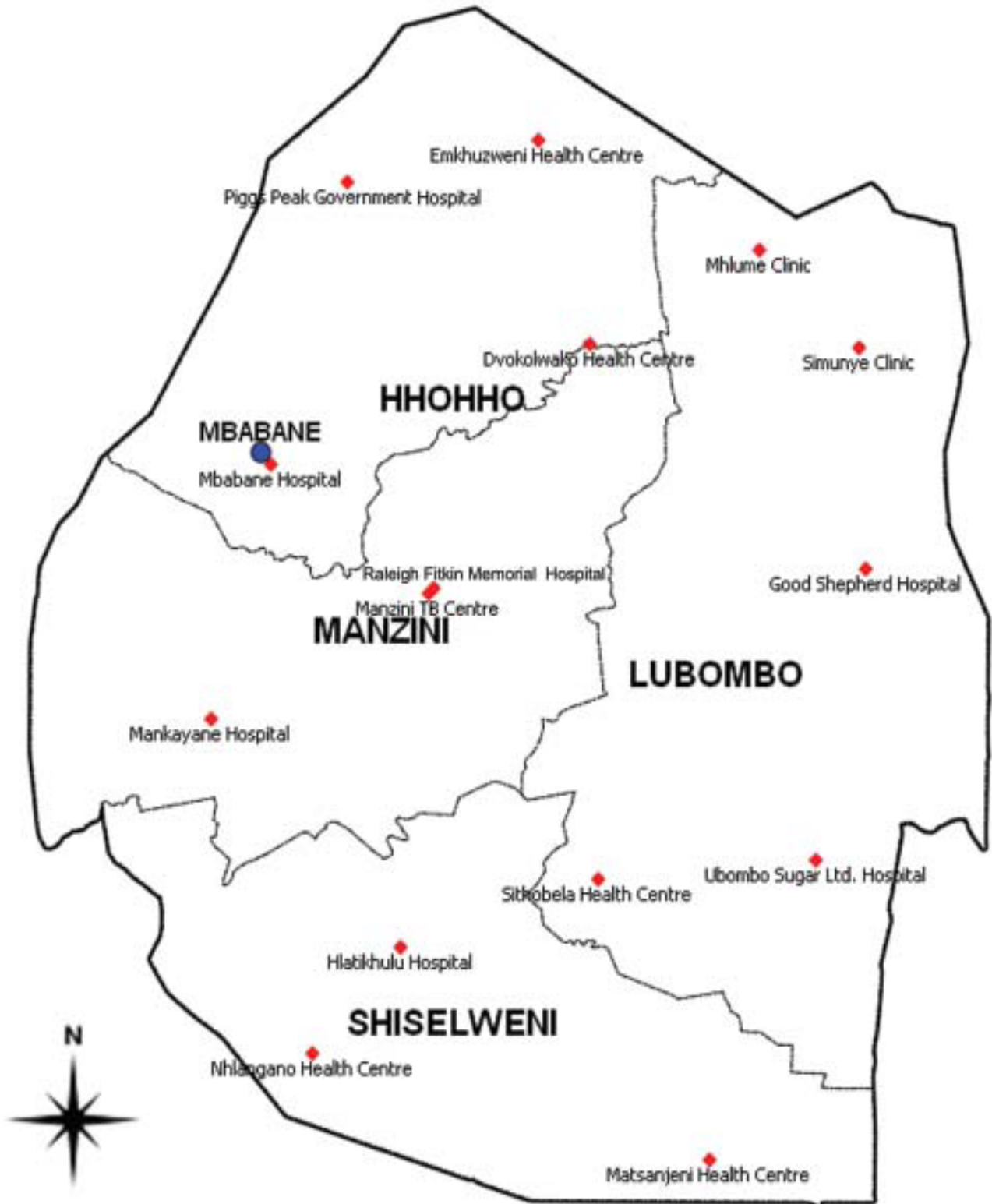
UNIVERSITY OF
KWAZULU-NATAL

INYUVESI
YAKWAZULU-NATALI

CLINICAL FACILITY ASSESMENT QUESTIONAIRE

1. General Information	
Person interviewed /name /title /organisation	
Facility name	
Facility address (situated)	
Facility type (hospital, clinic etc)	
Ownership (public /mixed/private	
Average population served by hospital/clinic	
2. Available Human Resource	
1.1 Number of ophthalmic nurses	
1.2 Number of optometrists	
1.3 Number of ophthalmologists	
1.4 Number of cataract surgeons	
1.5 Number of refractionists	
1.6 Number of non-clinical support staff	
3. Facility Structure	
2.1 Is there an eye ward?	
2.2 How many beds are available?	
2.3 How many beds are for adults?	
2.4 How many beds are for children?	
4. General Daily Duties	

3.1 Average number of patient seen per day	
3.2 Average number of children seen per day	
3.3 Average number of admission and discharges per day	
3.4 Average number of children admission and discharges per day	
3.5 How many times per day are ward round done?	
3.6 Who does the eye rounds? Optometrist/ ophthalmic nurse/ophthalmologist/ cataract surgeon	
3.7 Are anterior and posterior eye surgeries done?	
3.7.1 If yes, which eye surgery is commonly performed? Corneal repair/graft/Segment reconstruction/Retina surgery/victrectomy/Congenital cataract removal/Lid suturing/Retinal detachment surgery/Glaucoma surgery/laser surgery/Strabismus surgery/Retinopathy of prematurity surgery.	
3.8 Which eye surgeries are not performed? Use the choices listed in 3.5.1.	
3.9 Where do you refer these patients to get the necessary surgery?	
5. Statistics	
4.1Do you keep eye clinic operation statistics?	
4.2 What is the average length of stay for patients before operation?1day/2days/3days/more than 4 days/other, specify	
4.3 What is the average length of stay for patients after operation? 1day/2days/3days/more than 4 days/other, specify	
4.4 What do most patients present with? Ocular trauma/Congenital cataract/refractive error/External eye diseases/Congenital glaucoma/ Diabetic retinopathy/Hypertensive retinopathy/Strabismus/Amblyopia/Macular degeneration/Ocular tumours/ Eye lid and tear ducts conditions/Uveitis/Keratoconus	

6. Available Services (answer that does not require yes or no, please use the last column)			
	YES	NO	
5.1 Do you provide low vision services?			■
5.1.1 If yes, do you have trained personnel in low vision?			■
5.2 Do you have a specialist low vision clinic?			■
5.3 Do you provide low vision devices?			■
5.4 Do you provide rehabilitation for low vision patients?			■
5.5 Do you do contact lens fitting?			■
5.5.1 If yes, which type of contact lenses do you usually fit patients with? Rigid gas permeable lenses/Soft lenses	■	■	
5.6 Do you have a contact lens lab?			■
5.7 Do you have a paediatric ophthalmologist?			
5.8 Do you have a paediatric optometrist?			
5.9 Do you have a paediatric orthoptist?			
5.10 During general examination do you conduct Blood pressure testing for patients?			■
5.8 During general examination do you conduct glucose testing for patients?			
7. Clinical Duties			
6.1 Who does refraction on patients? Optometrist/Refractionist/Ophthalmic nurse	■	■	
6.2 Does the clinic provide spectacles?			■
6.3 Does the clinic provide ocular drugs?			■
6.4 Who dispenses the ocular drugs? Optometrist/ophthalmic nurse/ophthalmologist/ophthalmic surgeon/pharmacist	■	■	
6.5 Do you provide tertiary services for children?			■
6.6 If not, where do you refer these children to receive tertiary services?			■
6.7 Does clinic conduct outreach programmes			■
6.8 If yes, please specify (school, clinic, community etc)	■	■	

8. Equipment			Condition
7.1 Snellen visual acuity charts			
7.2 Projector			
7.3 Occluder			
7.4 Pupilarry distance ruler			
7.5 Penlight			
7.6 Prism bar			
7.7 Trial frame			
7.8 Trial case			
7.9 Phoropter			
7.10 Retinoscope			
7.11 Ophthalmoscope			
7.12 Slit lamp			
7.13 Keratometer			
7.14 Tonometer			
7.15 Autorefractor			
7.16 Amsler grid			
7.17 Tangent screen			
7.18 Humphreys visual field analyser			
7.19 Fundus camera			
7.20 Optical coherence tomography (OCT)			
9. Administrative Procedures (answer than does not require yes or no, please use the last column)			
8.1 Who is responsible for filling in the register? Optometrist, Ophthalmic nurse/clerk	■	■	
8.2 Are there instructions for filling in the register?			■
8.3 Has the eye clinic run out of register?			■
8.3.1If yes, how often does it run out of a register?	■	■	
8.4 How long does it take to replace the register?	■	■	
8.5 Where do you submit the register? Ministry/manager/SMO/just keep it.	■	■	
8.6 How long do you keep the registers?	■	■	
8.7 Who analyses the data from the register? Ministry/ eye clinic staff/ no analysis done/ other, specify.	■	■	
8.8 Do you receive any feedback on the analysed data form head office?			■

8.9 Is data entry done on the computer?			
8.10 Do you have periodic reports to be generated by the eye clinic staff?			
8.11 How does the ministry assist your department with usable information for planning and resource allocation? Workshops/reports/graphs/best practice manuals			
8.12 How do you use the reported information? Eye health planning/ Request of drugs /Requiring plans of activities /Epidemiological surveillance/Personal management evaluation /Implementing priority health programmes			
8.13 Do you display information in your health facility?			
8.13.1 If yes, what methods do you use? Graphs/maps/tables/ other, specify			
8.14 How do you store records? Registers or Reports			
10. Utilities			
9.1 Does the clinic have computers?			
9.2 Running water			
9.3 Electricity			

11. What are the difficulties that you encounter in the work place?

Appendix H: Interviews
Health Official Interview

Part A: The general questions

1. Many countries have prioritised health issues to increase life expectancy, improve disease prevention, nutrition and child immunisation. How far is Swaziland in terms of improving these issues?

2. The current health policy of Swaziland stipulates that the health care system does not have a functional referral system at various levels for effective service delivery e.g. there are long queues with less consultation times for patients. What new strategies have been adopted in order to address this problem?

3. Are there any new policy amendments with regards to the referral system? For example, prioritising PHCs, decentralisation of health facilities and coordination.

4. A review of the health policy shows that eye care professionals such as optometrists and ophthalmologists are not mentioned. Does this mean that the policy does not prioritise eye care or does it suggest that there is lack of eye care in the country as a whole?

5. What strategies are being implemented to strengthen the public health sector in order to improve eye health in the country?

6. What are the challenges faced by the ministry in trying to solve the above?

7. What are some of the positive outcomes that have been identified in trying to provide solutions to the problems encountered?

8. Some people do not know the roles and functions of optometrists, ophthalmologists, ophthalmic nurses and orthoptists. What is the ministry doing to make sure that the community is aware of these professions and know the roles and functions of each.

9. What progress has been made by the ministry in setting up eye clinics in order to improve access to an eye health facility for the majority of the citizens?

10. How many optometrists, ophthalmologists, ophthalmic nurses and orthoptists are employed by the government? Are these numbers sufficient to address the eye care needs of the country? What is the estimated deficit in terms of the required numbers?

11. How does the ministry plan to recruit the appropriate eye care professionals to work in these eye facilities?

12. Are there any evaluations performed to determine the status of the current eye workforce?

Part B: The child eye health questions

1. There has been a merger between the education and health ministries in an attempt to curb the deteriorating health system in the country. However, many children still do not have access to education. What measures has the ministry put in place to ensure that children who cannot access education where the school health programme exists get the necessary health care?

2. It has been reported that the school health programme faces human resource challenges. How does the ministry intend addressing these challenges?

3. Does the current school health programme have a referral system to ensure that the referred children get the assistance they require?

4. Are there follow-up mechanisms to monitor the referral system?

5. How are parents encouraged to bring children for their appointments?

6. Are there measures put in place to alleviate the health care service disparities between rural and urban areas?

7. What strategy does the ministry employ to disseminate information and create awareness about blinding diseases in children?

8. Does the ministry have child eye health promotion programmes such as promotions and awareness campaigns in the electronic and print media?

9. A 2006 report by the World Bank has shown that Swaziland's greater proportion of health expenditure is dedicated to curative services. How does this impact on the health promotion aspects of the school health services?

Education Official Interview
Part A: The general questions

1. Many nations have achieved the goal of the provision of basic education to its citizens. Where do you think Swaziland is in achieving the same goal?

2. What does the school health policy entail?

3. What are the factors that are hindering access to education?

4. In which grades is the highest dropout rate observed?

5. What are the factors that results in increase in the number of children dropping out of school at an early age?

6. What are the main health issues that affect dropouts? Can you prioritise them?

7. How important are eye health issues as a drop out factor? Please rate on a scale of 1-5?

8. In 2008, the UNICEF humanitarian report showed a decline in school attendance. The report highlighted factors such as children becoming care givers, children becoming sighted guides for their parents as contributing to this decline. What role has the ministry played in addressing these issues?

9. What mechanisms does the ministry utilize to disseminate feedback and information after resolving challenges?

Part B: The child eye health questions

1. A collaboration between the education and health ministries was formed in order to strengthen the quality of health in Swaziland. What is the role of the education ministry in the school health system?

2. Does a school health program exist? Please describe the key components of this school health system?

3. What are the problems that the ministry has encountered in implementing a school health program? How are these problems overcome?

4. How does the ministry monitor and evaluate the school health programme?

5. In terms of assisting children with visual problems, what programmes are put in place to assist these children achieve optimally in their studies irrespective of their disability?

6. What recruitment strategy is employed for children to be in the school for the visually impaired?

7. Does the ministry have community programmes designed to identify visually disabled children?

8. What strategy is there to ensure equal access to education for all and address the disparities that exist among marginalized groups such as rural communities and visually disabled children?

9. What strategies are implemented to promote an uptake of school health services among parents and other community stakeholders?

Appendix I
Title: Barriers to eye health care among school going children in Swaziland: Towards the development of a framework for access to child eye health care

Questionnaire for parents

General and demographic questions		Please mark with an (X)
1.	Gender	☐ Male ☐ Female
2.	Race	☐ African ☐ White ☐ Coloured ☐ Other: specify_____
3.	In your immediate family do you have any brothers, sisters who wear spectacles?	☐ Yes ☐ No
4.	How much time does it take you to get to your nearest health facility that renders eye health services with an eye doctor or Optometrist?	☐ 0-15 minutes ☐ 16-30 minutes ☐ 31-60 minutes ☐ more than 60 minutes
5.	In relation to question 4, with what mode of transport?	☐ Bus ☐ Mini Bus/Taxi ☐ Walking ☐ Private transport ☐ other < specify_____
6.	Do you have access to the following social media?	☐Face book ☐Twitter ☐Whatsapp ☐Mix-it ☐ Black Berry Messenger ☐Other: specify_____
7.	Do you have access to the following mainstream media?	☐ Television ☐ Radio ☐ Newspaper ☐ Other, specify_____
8.	Has any of the following taken place at your Village, residential areas? Please mark all applicable answers	☐ Eye screening ☐ Eye health education ☐ Eye health material distribution ☐ General health screening
9.	What is your occupation?	☐Civil servant ☐Military forces ☐Construction ☐Farming ☐Domestic worker ☐Business/Private ☐Unemployed ☐Textile/Production industry ☐Other: specify_____
10.	What grade did you complete at school?	☐< grade 6 ☐ 6-12 ☐ Tertiary ☐Never attended school ☐ Other, specify_____

Knowledge about eye care

11. **Since your child/children was/were born, have you ever taken them for an eye test?**

    a. ☐ Yes

    b. ☐ No

12. **If Yes, was this before school?**

    a. ☐ Yes

    b. ☐ No

13. **Where did you take your children to?**

    a. ☐ Public Clinic

    b. ☐ Public hospital

    c. ☐ Private Optometrist

    d. ☐ Private Ophthalmologist

    e. ☐ General practitioner

    f. ☐ Traditional healer

14. **If not, what were the reasons?**

    a. ☐ Did not know my child has to be tested

    b. ☐ Did not see the need

    c. ☐ Child was seeing well

    d. ☐ Financial constrains

    e. ☐ No eye care facilities available

    f. ☐ Only old people experience eye problems

15. **How old was/were the child/ children when you took them for eye testing?**

    a. ☐ 6 months

    b. ☐ 3 years

    c. ☐ 6 years

    d. ☐ 10 years and older

16. **What made you decide to take your child/children to see an eye care practitioner?**
   a. ☐ Informed by teacher
   b. ☐ Advised over radio
   c. ☐ Advised in newspaper
   d. ☐ Suspected vision problem
   e. ☐ Child born with vision problem
   f. ☐ Doctor referred me
   g. ☐ Nurse referred me
   h. ☐ Other, specify_____

17. **If you observed something that prompted you to take your child to an eye care practitioner, what was it?**
   a. ☐ Child plays with toys at close range
   b. ☐ Rubbing eyes repeatedly
   c. ☐ Tilting the head to one side
   d. ☐ Excessive clumsiness
   e. ☐ Headache
   f. ☐ Nausea or dizziness
   g. ☐ Squinting of eyes

18. **What did they give your child after presentation to the eye professional?**
   a. ☐ Eye drops
   b. ☐ Glasses
   c. ☐ Referred the child
   d. ☐ No Action taken

19. **Do you have a child that had to drop out of school because of not seeing well?**
   a. ☐ Yes
   b. ☐ No

20. **In your immediate family are there any children who were born blind or visually impaired?**

   a. ☐ Yes
   b. ☐ No
   c. ☐ Unsure

21. **If Yes, was the cause of blindness or visual impairment explained to you by the doctors?**
    a. ☐ Yes
    b. ☐ No

22. **Age of onset of visual loss**

    a. ☐ Since birth
    b. ☐ First year of life
    c. ☐ 2 -15 years
    d. ☐ >15 years
    e. ☐ Unknown/unsure

23. **Does the visually impaired/blind child/children attend school?**

    a. ☐ Yes
    b. ☐ No

24. **If not, why?**

    a. ☐ Do not know where to send child for schooling
    b. ☐ Without seeing you cannot be educated
    c. ☐ Scared that child will not cope
    d. ☐ Child will be teased by peers
    e. ☐ Other (please specify):_____

25. **Do you know any school for the blind and visually impaired in the country?**

    a. ☐ Yes
    b. ☐ No

26. **Do you think your child's performance at school can be affected by poor vision?**
    a. ☐ Yes
    b. ☐ No
    c. ☐ Unsure

27. What do you think are the causes of poor vision in children?
- **a.** ☐ Reading a lot
- **b.** ☐ Computer games
- **c.** ☐ TV
- **d.** ☐ Eye diseases
- **e.** ☐ Headache
- **f.** ☐ Other (please specify):_____

28. Do you know of any eye diseases that affects children?
- a. ☐ Yes
- b. ☐ No

29. If Yes, which of the following eye diseases do you know?
- a. ☐ Congenital cataract
- b. ☐ Trachoma
- c. ☐ Allergic Conjunctivitis
- d. ☐ Vitamin A deficiency
- e. ☐ Refractive error (Short sighted and far sightedness)
- f. ☐ None of the mentioned diseases

30. What/who is your source of information?
- a. ☐ Nurse
- b. ☐ Doctor
- c. ☐ Neighbours
- d. ☐ Friends
- e. ☐ Radio
- f. ☐ Newspaper
- g. ☐ TV
- h. ☐ Other (please explain):_____

31. Have eye health professionals ever visited your area?
- a. ☐ Yes
- b. ☐ No
- c. ☐ Unsure

32. If Yes, when was the last time they visited?

  a. ☐ Less than a year
  b. ☐ Greater than 1year
  c. ☐ 2-4years
  d. ☐ More than 5 years

33. Which of the following eye health practitioners were present during the visit?

  a. ☐ Optometrist
  b. ☐ Ophthalmic nurse
  c. ☐ Ophthalmologist
  d. ☐ Allied health workers
  e. ☐ Never heard of any

34. Does the area where you live have a clinic/health care facility?

  a. ☐Yes
  b. ☐No
  c. ☐ Unsure

35. If Yes, does it offer eye care services?

  a. ☐ Yes
  b. ☐ No
  c. ☐ Unsure

36. Do you feel you are well informed about eye health problems?

  a. ☐ Yes
  b. ☐ No
  c. ☐ Unsure

37. What sources of information you can think of that can be used to reach out to other parents regarding vision problems among children?

  a. ☐ Billboards
  b. ☐ Black berry messenger
  c. ☐ Campaigns
  d. ☐ Radio
  e. ☐ Newspaper
  f. ☐ TV
  g. ☐ Traditional Healers
  h. ☐ Other (please explain):_____

38. Do you think children should wear glasses?

    a. ☐ Yes

    b. ☐ No

    c. ☐ Unsure

39. Do you think wearing glasses at an early age makes vision poor?

    a. ☐ Yes

    b. ☐ No

    c. ☐ Unsure

40. Do you believe that children born blind have equal opportunities to access education?

    a. ☐ Strongly disagree

    b. ☐ Disagree

    c. ☐ Unsure

    d. ☐ Agree

    e. ☐ Strongly agree

Practices towards eye care

41. Do any of your children wear glasses?

    a. ☐Yes

    b. ☐No

42. If Yes, do you know what they are for?

    a. ☐ Yes

    b. ☐ No

    c. ☐ Unsure

43. Will you have a problem if your child/children had to wear glasses?

    a. ☐ Yes

    b. ☐ No

    c. ☐ Unsure

44. Would you allow your child to undergo eye surgery?

    a. ☐ Yes

    b. ☐ No

    c. ☐ Unsure

45. If not, why?

    a. ☐ Fear of outcome
    b. ☐ Damage eye more
    c. ☐ Cost of the actual operation
    d. ☐ Knowledge of services
    e. ☐ Cultural and social barriers
    f. ☐ Accessibility to services

<u>Thank you for filling in the questionnaire</u>

Questionnaire for teachers

Title: Barriers to eye health care among school going children in Swaziland: Towards the development of a framework for access to child eye health care

General and demographic questions		Please mark with an (X)
	Gender	☐Male ☐Female
	Race	☐ African ☐ White ☐ Coloured ☐ Other: specify_____
	Are there any children in your immediate family (mother, father, brothers and sisters) who wear spectacles?	☐ Yes ☐ No ☐ Unsure
	Are there any children in your immediate family who were born blind or gone blind?	☐ Yes ☐ No ☐ Unsure
	How long does it take you to get to your nearest health facility that offers eye health services with eye doctor or Optometrist?	☐ 0-15 minutes ☐ 16-30 minutes ☐ 31-60 minutes ☐ more than 60 minutes
	From question 5 above, what mode of transport do you use?	☐ Bus ☐ Mini Bus/Taxi ☐ Walking ☐ Private transport ☐ Other, specify_____
	Do you have access to the following social media?	☐Face book ☐Twitter ☐Whatsapp ☐mix-it ☐ Black Berry Messenger ☐other: specify_____
	Do you have access to the following mainstream media?	☐ Television ☐ Radio ☐ Newspaper ☐ other, specify_____
	Has any of the following ever taken place at your school? Please tick all applicable answers	☐ Eye screening ☐ Eye health education ☐ Eye health material distribution ☐Oral health services ☐ Audio (hearing) services ☐ Psychologists, ☐Social workers ☐Environmental health services, ☐Public health nursing ☐Mental health nursing
10.	Do you admit children with visual problems in your school?	☐ Yes ☐ No ☐ Unsure
11.	Is eye screening one of the requirements before children can be admitted?	☐ Yes ☐ No ☐ Unsure

12. **Which of the following eye care professionals do you know?**

    a. ☐ Ophthalmic nurse
    b. ☐ Optometrist
    c. ☐ Optician
    d. ☐ Ophthalmologist
    e. ☐ All of the above
    f. ☐ None of the above

13. **In your training as a teacher, were you ever taught how to detect children with visual problems?**

    c. ☐ Yes
    d. ☐ No
    e. ☐ Unsure

14. **Do you know any school for the blind and visual impairment in the country?**

    a. ☐ Yes
    b. ☐ No

15. **Do you know about facilities for children with special needs e.g. albino child?**

    a. ☐ Yes
    b. ☐ No
    c. ☐ Unsure

16. **If Yes, what do you do to assist these children?**

    a. ☐ Always wearing glasses
    b. ☐ Well protected from sunlight
    c. ☐ Give them extra time to complete class work
    d. ☐ Sit in front of class

17. **Are you aware of visual problems that an albino child presents with?**

    a. ☐ Yes
    b. ☐ No

18. **Do you think healthy eyes are important for performance in school?**
    a. ☐ Strongly disagree
    b. ☐ Disagree
    c. ☐ Unsure
    d. ☐ Agree
    e. ☐ Strongly agree

19. **The most common management or treatment of refractive error (short sighted, far sightedness or astigmatism) is:**
    a. ☐ Spectacles
    b. ☐ Eye drops
    c. ☐ Surgery
    d. ☐ Other (please specify):_____

20. **Are you aware that lighting in the class room play an important part in visual performance of children?**
    a. ☐ Yes
    b. ☐ No

21. **Are you aware that children with vision problems cannot cope with academic work?**
    a. ☐ Yes
    b. ☐ No

22. **Do you attend workshops where you are taught how to teach children with vision problems?**
    a. ☐ Yes
    b. ☐ No

23. **Is eye screening is lacking in you school?**
    a. ☐ Strongly disagree
    b. ☐ Disagree
    c. ☐ Unsure
    d. ☐ Agree
    ☐ Strongly agree

24. **Which of the following eye diseases and conditions do you know?**
    a. ☐ Congenital cataract
    b. ☐ Trachoma
    c. ☐ Onchocerciasis
    d. ☐ Vitamin A deficiency
    e. ☐ Refractive error (Short sighted and far sightedness)
    f. ☐ All of the above
    g. ☐ None of the above-mentioned diseases

25. **Which is the condition affects school children the most?**
    a. ☐ Congenital cataract
    b. ☐ Trachoma
    c. ☐ Onchocerciasis
    d. ☐ Vitamin A deficiency
    e. ☐ Refractive error (Short sighted and far sightedness)
    f. ☐ None of the mentioned diseases

26. **Where did you learn about these conditions?**
    a. ☐ Nurse
    b. ☐ Doctor
    c. ☐ Neighbours
    d. ☐ Friends
    e. ☐ Radio
    f. ☐ Newspaper
    g. ☐ TV
    h. ☐ Other (please explain):_____

27. **Are there signs and symptoms that you as a teacher can pick up that indicates to you that the child may have visual problem?**
    a. ☐ Yes
    b. ☐ No

28. If Yes, what are these signs and symptoms? (can mark more than one option)
   a. ☐ Copying from friends notes
   b. ☐ Red eyes
   c. ☐ Persistent headache
   d. ☐ Continuous eye rubbing
   e. ☐ Squinting eyes
   f. ☐ Making mistakes when taking down information
   g. ☐ Closing or covering one eye
   h. ☐ Holding a book close to the face
   i. ☐ Losing his/her place while reading
   j. ☐ All of the above

29. In your teaching experience have you ever seen children/child with vision problems?
   a. ☐ Yes
   b. ☐ No

30. If Yes, state what these problems were.
   a. ☐ Squinting
   b. ☐ Closing or covering one eye
   c. ☐ Holding a book close to the face
   d. ☐ Losing his/her place while reading
   e. ☐ Other, specify_____

31. What did you advice the child or parent to do?
   a. ☐ Go to the hospital
   b. ☐ Go to the clinic
   c. ☐ Wash face and go back to class
   d. ☐ Sleeping
   e. ☐ Use traditional medicine

32. Are there any children in your class who have a squint?
   a. ☐ Yes
   b. ☐ No
   c. ☐ Unsure

33. If Yes, how many?
   a. ☐ less than 5
   b. ☐ 5 to10
   c. ☐ Greater than 10

34. **Have eye health professionals ever visited your school?**
   a. ☐ Yes
   b. ☐ No
   c. ☐ Unsure

35. **If Yes, when was the last time they visited?**
   a. ☐ Greater than 1year
   b. ☐ 2-4years
   c. ☐ More than 5 years

36. **Which of the following eye health practitioners were present during the visit?**
   a. ☐ Optometrist
   b. ☐ Ophthalmic nurse
   c. ☐ Ophthalmologist
   d. ☐ General nurse
   e. ☐ Other, specify_____

37. **Does the area where the school is located have a clinic/health care facility?**
   a. ☐ Yes
   b. ☐ No
   c. ☐ Unsure

38. **If Yes, does it offer eye care services?**
   a. ☐ Yes
   b. ☐ No
   c. ☐ Unsure

39. **In your teaching experience do you know of any children who have had to drop out of school because of visual problems?**
   a. ☐ Yes
   b. ☐ No
   c. ☐ Unsure

40. **Do you feel that you are well informed about eye health problems?**
   a. ☐ Yes
   b. ☐ No
   c. ☐ Unsure

41. **In your opinion, how serious is the refractive error (Short sighted and far sightedness) problem in school children?**
    a. ☐ Very serious
    b. ☐ Somewhat serious
    c. ☐ Not very serious

42. **As a teacher, what is your view on children wearing glasses at school?**

    a. ☐ Children get teased by their peers
    b. ☐ It has an impact on their school performance
    c. ☐ It has an impact on having good relationship with peers
    d. ☐ Unsure

Practices about eye care

43. **If a child complains of persistent headaches reading or looking at the board while in class as a teacher what do you do?**
    a. ☐ Advice parents to have the child's vision tested
    b. ☐ Inform the Principal
    c. ☐ Inform the school health services

44. **If a child is not performing to his or her potential in school do you consider vision as one of the contributing factors to child's poor performance/achievements?**
    a. ☐ Yes
    b. ☐ No

45. **Are there any children in your class wearing glasses?**
    a. ☐ Yes
    b. ☐ No

46. **If Yes, how many?**
    a. ☐ Less than 5
    b. ☐ 5 to10
    c. ☐ Greater than 10

47. **Do you monitor children prescribed with glasses to ensure that they wear their glasses at all times while at school?**

    a. ☐ Yes

    b. ☐ No

48. **Where do you refer a child if you find out that he/she has visual problems?**

    a. ☐ Public hospital

    b. ☐ Public clinic

    c. ☐ Traditional healer

    d. ☐ Private optometrist

    e. ☐ Inform parent and leave it up to them to find a service provider

    f. ☐ Never done that

<u>Thank you for filling in the questionnaire</u>

Title: Barriers to eye health care among school going children in Swaziland: Towards the development of a framework for access to child eye health care

General and demographics		Please mark with an (X)		
1.	Gender	☐Male ☐Female		
2.	Race	☐ African ☐ White ☐ Coloured ☐ Other: specify_____		
3.	In your immediate family are there any children who wear spectacles?	☐ Yes ☐ No		
4.	In your immediate family are there any children born blind or gone blind?	☐ Yes ☐ No		
5.	How much time does it take you to get to your nearest health facility that renders eye health services, eye doctor or Optometrist?	☐ 0-15 minutes ☐ 16-30 minutes ☐ 31-60 minutes ☐ more than 60 minutes		
6.	In relation to question 5, with what mode of transport?	☐ Bus ☐ Mini Bus/Taxi ☐ Walking ☐ Private transport ☐ other < specify_____		
7.	Do you have access to the following social media?	☐Face book ☐Twitter ☐Whatsapp ☐Mix-it ☐ Black Berry Messenger ☐Other: specify_____		
8.	Do you have access to the following mainstream media?	☐ Television ☐ Radio ☐ Newspaper ☐ Other, specify_____		

Knowledge about eye care and services

9. **Are there guidelines for standard paediatric ophthalmic practise?**
    a. ☐ Yes
    b. ☐ No
    c. ☐ Unsure

9.1 If your response to 9 above is "No", what in your opinion is/are the reason/s for the lack of guidelines………………………………………..

10. **Are there any national guidelines for referring children to paediatric ophthalmic services?**
    a. ☐ Yes
    b. ☐ No
    c. ☐ Unsure

10.1 If your response to 10 above is "No", what in your opinion is/are the reason/s for the lack of referring guidelines………………………………………

11. **What services are available for children with visual disability?**
    a. ☐ Paediatric low vision care
    b. ☐ Paediatric ophthalmic care
    c. ☐ Rehabilitation/support
    d. ☐ Education (blind schools)
    e. ☐ Refraction Services
    f. ☐ Other (please specify): _____

12. **Is there effective integration between ophthalmic services and other eye care services such as low vision, rehabilitation services and education?**
    a. ☐ Yes
    b. ☐ No
    c. ☐ Unsure

13. **Who pays for children that require eye surgery?**
    a. ☐ Non-governmental organisation/Mission
    b. ☐ Government
    c. ☐ Parents in private sector
    d. ☐ Parents pay in government sector
    e. ☐ Other (please specify):_____

14. **Are there insurance schemes that cover children's eye care?**
    a. ☐ Yes
    b. ☐ No
    c. ☐ Unsure

15. **What are the current procedures for monitoring paediatric ophthalmic services?**
    a. ☐ Interviews
    b. ☐ Surveys
    c. ☐ Reports
    d. ☐ None
    e. ☐ Other (please specify):_____

16. **What indicators are used to monitor paediatric services and programmes?**
    a. ☐ Number of refracted children
    b. ☐ Number of children attending services
    c. ☐ Number of operated children
    d. ☐ Number of children dispensed spectacles
    e. ☐ Number of paediatric cases seen
    f. ☐ None
    g. ☐ Other (please specify):_____

17. **What are the barriers that prevent children from accessing eye care services?**
    a. ☐ Parents believe nothing can be done
    b. ☐ Language
    c. ☐ Culture/traditional beliefs
    d. ☐ Fear of hospitals and outcome
    e. ☐ Competing demands for scarce resources
    f. ☐ Cost
    g. ☐ Distance travelled
    h. ☐ Parents unaware that something can be done
    i. ☐ Other (please specify):_____

18. **Are any of the following children less likely to access eye services?**
    a. ☐ Low income
    b. ☐ Rural children
    c. ☐ Multiple disability
    d. ☐ Girls
    e. ☐ Boys
    f. ☐ Other (please specify)_____

19. **Do you believe that children born blind or with severe visual disability have equal opportunities to access education?**
   a. ☐ Strongly disagree
   b. ☐ Disagree
   c. ☐ Unsure
   d. ☐ Agree
   e. ☐ Strongly agree

20. **Dou you feel you are well informed about eye health problems?**
   a. ☐ Yes
   b. ☐ No
   c. ☐ Unsure

21. **Do you think an eye test is important for young children?**
   a. ☐ Yes
   b. ☐ No
   c. ☐ Unsure

22. If Yes, why? _____

23. **Which of the following eye diseases or conditions do most children present with?**
   a. ☐ Congenital cataract
   b. ☐ Trachoma
   c. ☐ Vitamin A deficiency
   d. ☐ Refractive error (Short sighted and far sightedness)
   e. ☐ Corneal Injuries
   f. ☐ Eye injuries
   g. ☐ Allergic Conjunctivitis
   h. ☐ None of the mentioned diseases
   i. ☐ Unsure because I have no knowledge of eye disease/conditions

24. **What do you think can be done to prevent childhood blinding diseases?**
   a. ☐ Encouraging eye testing at an early age
   b. ☐ Awareness campaigns
   c. ☐ Screening in schools
   d. ☐ Not sure
   e. ☐ No need for now

25. **Do you feel hospitals are doing enough to attend to childhood blinding diseases?**
   a. ☐ Yes
   b. ☐ No
   c. ☐ Unsure

26. **If No, why do you think so?**
   a. ☐ Lack of trained personnel
   b. ☐ Lack of equipment
   c. ☐ No children with visual problems presenting
   d. ☐ Other (please specify)_____

27. **Do you consult children with visual problems in your clinic?**
   a. ☐ Yes
   b. ☐ No

28. **If No, why?**
   a. ☐ No paediatric personnel
   b. ☐ Lack of equipment
   c. ☐ Refer them
   d. ☐ Other (please specify)_____

29. **How often do you request that children born with visual impairment or blindness present to your eye clinic?**
   a. ☐ Every Six months
   b. ☐ Yearly
   c. ☐ Every Two Years

30. **What do you think are the causes of poor vision in children?**
   a. ☐ Reading a lot
   b. ☐ Computer games
   c. ☐ TV
   d. ☐ Eye diseases
   e. ☐ Headache
   f. ☐ Short sightedness
   g. ☐ Far Sightedness

31. **What sources of information you can think of that can be used to reach out to other parents on vision problems among children?**
    a. ☐ Billboards
    b. ☐ Black berry messenger
    c. ☐ Campaigns
    d. ☐ Radio
    e. ☐ Newspaper
    f. ☐ TV
    g. ☐ Other (please explain):_____

32. **Do you think children should wear glasses?**
    a. ☐ Yes
    b. ☐ No
    c. ☐ Unsure

33. **Do you think wearing glasses at an early age makes the vision worse?**
    a. ☐ Yes
    b. ☐ No
    c. ☐ Unsure

Practices about eye care

34. **At what ages do you advice parent's to take their children for eye testing?**
    a. ☐ 6 months
    b. ☐ 3 years
    c. ☐ 6 years
    d. ☐ 10 years and older

35. **Do you encourage parents to have their children eyes tested before they start schooling?**
    a. ☐ Yes
    b. ☐ No

36. **Do you have an outreach programme for vision screening and eye testing?**
    a. ☐ Yes
    b. ☐ No

37. **If Yes, when was the last time you did outreach programmes?**
    a. ☐ Less than a year
    b. ☐ Greater than 1year
    c. ☐ 2-4years
    d. ☐ More than 5 years
    e. ☐ Never visited

38. **If you engage in outreach programmes, does the programme include eye care professionals?**
    a. ☐ Yes
    b. ☐ No

39. **Where do you conduct these outreach programmes?**
    a. ☐ Rural clinic
    b. ☐ Other hospitals without eye clinics
    c. ☐ Community

40. **Do you engage in outreach programmes to treat children with vitamin A deficiency?**
    a. ☐ Yes
    b. ☐ No

41. **As health officials do you train teachers as to how to screen and support children with Visual Impairment?**
    a. ☐ Yes
    b. ☐ No

<u>Thank you for filling in the questionnaire</u>