

## **A situational analysis of eye care services in Swaziland**

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**Key words:** Children, Access, Leadership and governance, Eye health services and Swaziland.

**Contributions:** The authors contributed equally in writing this article.

**Conflict of interest:** The authors declare no potential conflict of interest.

**Funding:** None.

### **Abstract**

Compared to other African countries, Swaziland performs the worst in terms of providing eye health care services. A priority goal of the World Health Organization (WHO) is to alleviate childhood blindness, particularly in low-income countries such as Swaziland, where many people live in poverty, which is a contributor to poor health outcomes. A mixed method approach that entailed a document review, key informant interviews and clinical facility assessment questionnaires was used. Hospitals and mission clinics offering ophthalmic services were identified through the website of the Ministry of Health and verified during key informant interviews. A saturated sampling procedure was applied due to the few facilities that offer eye care services. Six framework components from the WHO for analysing health systems were utilised in an eye health care service context: leadership and governance, eye health services, eye health workforce, eye health financing systems, eye health medical supplies and technologies, and eye health information systems. Poor management, lack of accountability, poor monitoring and evaluation mechanisms, weak coordination and ineffective private-public sector regulations were identified as factors that lead to poor eye care in the country. The optometrists indicated that refractive services are the most rendered ophthalmic services. The exodus of healthcare practitioners has contributed to the downfall of the public health sector in the country. Five government eye care facilities, 3 government hospitals, 1 non-governmental organization (NGO) and a church mission clinic were included in this analysis. The eye services distribution favors the more affluent areas, particularly the more urban Hhohho Region, which is also where most of the eye health professionals are located. No

campaigns have been conducted to prevent childhood blinding diseases or create awareness about getting children's eyes tested for refractive correction. The burden of eye diseases among children in Swaziland remains unknown. More eye health care personnel and equipped facilities are needed throughout the country, and the eye health care program needs to be adopted.

## **Introduction**

The World Bank classifies Swaziland as a lower middle-income country,<sup>1</sup> and is among the worst in the world regarding providing eye health care services.<sup>2</sup> 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). The prevalence of blindness is estimated to be approximately 1%,<sup>3</sup> while the epidemiology of eye conditions, not only for children but the entire population, remains unknown.

Inadequate eye care services are not unique to Swaziland, this global challenge having led to the VISION 2020: The Right to Sight campaign identifying strategies for countries to improve access to and the quality of eye services. A priority goal of the WHO is to alleviate childhood blindness, particularly in developing countries, such as Swaziland, where many live in poverty, a contributor to poor health outcomes.<sup>4</sup> Alleviating childhood blindness can be achieved by implementing sustainable, equitable and evenly distributed programs to address early intervention pediatric eye care services across the country. Benchmarks have been set by the WHO that by the year 2020, one pediatric ophthalmic center, and one Child Eye Health Tertiary Facility (CEHTF) per 10 million people should have been established.<sup>5</sup> However, as Swaziland's population is only 1.1 million, the globally set targets are not generally applied in this country.

Of the 12 CEHTFs in the sub-Saharan region, Kenya, Nigeria, South Africa, Tanzania and Uganda have tertiary facilities to meet children's eye health care needs.<sup>5,6</sup> These countries have tertiary institutions that offer medical training, and have implemented health policies to respond to the needs of their populations.<sup>6</sup> Despite the critical role that pediatric optometrists could play in preventing long-term blindness in children, many African countries still do not report having any of these professionals. Moreover, the lack of low vision specialists is also a cause for concern, as affected children cannot perform their normal activities of daily living. In addition, the remaining vision of visually impaired children can be utilized maximally with appropriate interventions by low vision specialists.<sup>5</sup> Swaziland lags behind many other African countries in several aspects of health care due to poor management, lack of accountability, poor monitoring and evaluation mechanisms, weak coordination and ineffective private-public sector regulations.<sup>2</sup> In addition, due to the lack of in-country training programs, those wanting to enter the eye care professions need to receive training outside of the country, which can be costly and may result in them not returning to practice in Swaziland.

To reach the goals of Vision 2020 of eliminating avoidable blindness and providing equitable geographic distribution of appropriate ophthalmic services, regular monitoring and evaluation of existing services is essential. The analysis of each facility enables the health system to be scrutinised regarding whether the efforts being made meet the populations' demands, particularly with regards to the quality, type and quantity of services rendered. This also enables the identifications of gaps, strengths, and current and future needs, all of which are important for investment planning.<sup>7</sup> Health systems that are designed to ensure that the good health of a population is restored, maintained, and promoted requires involvement of the government, NGOs, interested stakeholders as well as civil society. In an effort to assist countries in developing health policies or guidelines, the WHO introduced the following six framework components to analyse health systems: leadership and governance, health workforce, health services, health financing systems, medical supplies and technologies, and health information.<sup>8</sup> As a strategy towards developing a child eye health access framework in Swaziland, this paper presents a situational analysis of these six components in an eye health care service context.

## **Materials and Methods**

The study used a mixed method approach that entailed the following data collection methods: a document review process (qualitative data), key informant interviews (qualitative data) and a questionnaire survey (quantitative data) of senior eye clinic staff. The document review entailed extracting relevant data from health policies and school health documents about child eye health care.

Key informant interviews were conducted with health and education officials, including the directors and heads of school health, regarding their perspective on relevant government policies (specifically health and education), current and future efforts regarding the school health programme, specifically eye health. All interviews were digitally recorded with the participants' permission, and to ensure credibility of the data, transcripts were sent for their verification, with a summary of the analysis being provided for member checking.

Church mission clinics, NGOs and government hospitals offering eye services completed a questionnaire about their facilities and services, specifically those that had at least one ophthalmologist/cataract surgeon or one optometrist providing outpatient consultations, refraction, and spectacle dispensing or surgical services. This was done to understand the Ministry's approaches to providing child eye health resources, managing referrals and the problems encountered.

Information obtained from the document review, key informant interviews and clinical facility assessment questionnaire was categorized into the six components from the WHO to analyze health systems. The study protocol was approved by the Biomedical Research and Ethics Committee (BE338/13) of University of KwaZulu-Natal (UKZN) and the Swaziland Health Ethics Committee. Participation in the study was voluntary, and only those who signed the consent form participated.

## **Results**

The results are presented with respect to the six WHO areas of leadership and governance, eye health services, eye health workforce, eye health financing systems, eye health medical supplies and technologies and eye health information systems, and combines the results of the three study components: document review, key informant interviews and clinical facility assessment questionnaire (Figure 1).

### ***Leadership and governance***

This section relates to existing strategic policy frameworks that are in line with legislative plans, accountability as stated by the national health strategic plan and system designs.<sup>8</sup> Swaziland's National Health Policy of 2006 is the cornerstone of health care delivery, and enshrines the rights of its citizens to equal access to affordable health services.<sup>7</sup> However, the policy ignores issues pertaining to preventative services, and does not have national priority goals and targets. In addition, the document has not been updated, with the co-infections of Human Immunodeficiency Virus (HIV), Acquired immunodeficiency syndrome (AIDS), Tuberculosis (TB) and other opportunistic infections having put a considerable strain on the under-resourced health system. The unequal distribution of resources across the country further impacts on the ability to implement the policy, with people in rural areas being excluded from new programs due to limited financial and human resources.

A referral system framework will shortly be presented to the Ministry of Health, and will address challenges in the sub-optimally functioning referral system. There is no evidence of Swaziland Government having signed the Vision 2020 declaration or launched an eye health program, hence the absence of an eye health organogram. The paucity of government policies and guidelines on eye care contributes to the non-prioritization of resources to this area of need for its inhabitants in general, and children in particular, who are therefore unable to receive appropriate ophthalmic services.<sup>9,10</sup>

The school health program is ineffective in its ability to respond to strengthening quality, relevant, equitable and efficient services to ensure that all children have access to health services for them to

achieve their potential throughout their education cycle.<sup>11</sup> These include: a centralized health management system with inefficient coordination; curative services have preference to promotive and preventive services; urban areas are prioritized over rural settings; poor monitoring and evaluation of school health programs; the school health program being the responsibility of the Ministry of Health; the integration of fragmented services into Primary Health Care (PHC); national decentralization policy not being implemented, and the lack of formal referral policy.<sup>2,12</sup> The key informants highlighted poor management, misuse of funds and unaccountability as contributing to this poorly functioning health system. The hospital managers are reported to be overwhelmed with duties and not given the necessary support by the national office to be able to adequately perform their duties.

### ***Eye health services***

Proper health services are those that do not discriminate but promote equity in accessing quality effective services, even in a less resourced facility, as well as those concerned with promotive and preventative programs.<sup>8</sup> The Director of Health services noted that the current service provision to meet its citizen's needs is inadequate, being additionally compromised by the mal-distribution of resources, including the absence of primary and secondary eye care facilities. Hence, the lack of resources also makes it difficult for the tertiary health centers to function effectively, with ophthalmic services only being provided at this level. Due to these infrastructure limitations, many rural patients attend tertiary facilities without first going through the various levels of the health care system. These specialized facilities are not designed to cater for large numbers, resulting in the professionals and resources being over-burdened, which impacts on the quality of care rendered.

The clinic facility assessment questionnaire identified all the eye clinics as not being adequately equipped, their services being affected by the lack of human resource and equipment (including medical supplies and technologies), which prevents them from effectively delivering appropriate eye care services. Refractive services are the most rendered ophthalmic services in the country, with other essential services being a low priority, such as rehabilitation and education to assist the visually impaired and the blind to become normal citizen, regardless of their disability (UNICEF, 2009; IAPB, 2014).

The key stakeholder interviews showed that the promptness to respond to complaints, and poor recognition of eye health services, were major concerns. These problems have led to the deployment of ophthalmic nursing staff and optometrists, which had been identified as being uneven throughout the country. The lack of infrastructure development, such as space to conduct minor surgeries and to keep fragile equipment, particularly at the tertiary health institutions offering eye care, was also a major concern. In addition, the referral hospital lacks basic amenities, such as hot water, and have mixed wards that are shared by females, males and children.

The school health system does not function optimally due to the lack of human and financial resource, with only two ophthalmic nurses to attend to referred children in the entire country, as indicated by the school health HOD in the Ministry of Health. Owing to the nurses' high workloads, some of the referred children are required to return at a later date to be attended to, by which time substantial damage to their vision may have occurred. Furthermore, there has been no attempt to set up new clinics for children requiring follow-up or further assessment and who have transport problems. This therefore requires children to be referred to another region that offers ophthalmic services, due to the unavailability of a health facility in their region, as indicated by the Director of the school health program in the Ministry of Health. Parents who have children screened for any sickness during school health visits, and need further assessment, are generally informed by the class teachers following the screening.

There is a need for close collaboration amongst all role players, with the Ministries of Health and Education needing to ensure that the school health program reaches all children in the public education system. Eye health programs can be incorporated in teacher training programs and form part of health

education in schools. Furthermore, teachers can be trained by eye health professionals to identify, screen and refer children with visual problems, which will reduce the eye service staff's workload significantly. Reports from India and Tanzania have shown that teachers can play a central role in eye health care.<sup>13,14</sup> In addition, principals do not receive the necessary support to ensure learning is conducted in a conducive environment, and the Ministry of Health faces transport issues that prevents them from conducting screenings throughout the country. The Ministry of Education currently relies on the Ministry of Health to deploy staff to conduct teacher training workshops for all health-related matters.

There are very few health practitioners mandated to conduct workshops for teachers, as the hospitals are overcrowded with patients due to the lack of human resource, making it difficult for the staff to leave their posts to conduct training. As noted by the Director of Education, *'It is quite difficult to implement the program as planned from the current situation. An option is to employ people whose job descriptions are to implement the health program, this being done with the assistance of guidance officers under the direction of the senior education and school health authorities'*. Another critical factor is the scarcity of teachers trained in teaching the visually impaired children, which result in many parents not enrolling their children into schools but preferring to keep them at home.

The key informants indicated that most children who are in need of eye care services are from poor rural background, and are denied access due to the lack of clinics close to where they live or go to school. In the absence of proper functioning health system, implementing a school eye health programme becomes a challenge. The School Health Policy document emphasises access to quality health services for all children, however, this depends on the available health facilities provided by the school, such as first aid kit, health checks and awareness. A document drafted to assist schools in 2011 stipulates that upon enrolment, schools are mandated to check if children have completed their immunization schedule irrespective of grade, but does not address issues of disability that may need to be considered, including their ability to see and hear, these being important components to participating in a normal school. The document also focuses on three key elements, these being: prediction, prevention and preparedness,<sup>15</sup> the intention being that for any health challenges arising, the protocols to follow are already in place in a school setting.

The lack of skilled personnel and outreach programs to provide ophthalmic services has resulted in the escalation of eye diseases, particularly among rural dwellers and those who are illiterate. Many people do not access quality health care as private services are unaffordable to the average citizen. Some fail to access even the public hospitals, as patients are expected to pay a certain amount to be treated, which is unaffordable for the many people who live below the poverty line.

Eye health care outreach services were initiated in 2010 by a designated coordinator to reach schools/underserviced areas, and were run from the clinics that did have eye health professionals. These outreach services reached many people in need of ophthalmic services throughout the country where they were not provided. However, in 2014, financial constraints, lack of human resource and the skewed distribution of existing clinics in the four regions were the main reasons for it being discontinued, as indicated by the school health HOD in the Ministry of Health. The available eye care needs in the entire country does not suit children eye care needs,<sup>16</sup> with Table 1 indicating the services offered in each of the evaluated clinics using the clinical facility assessment questionnaire in Swaziland.

### ***Eye health workforce***

This section relates to having adequate, efficient, effective and competent staff who are provided with all necessary resources to achieve the best outcomes.<sup>8</sup> The document review revealed that Swaziland's health system has a chronic shortage of skilled human resources, which impacted on the country's capacity to effectively implement primary health and specialist care.<sup>12</sup> Few of the eye health professionals practicing in Swaziland are of Swazi origin, with foreign eye professional being employed by the church missions and working in the public sector.<sup>17,18</sup>

The key informants also highlighted concerns that the health workforce has many non-Swazi citizens as a result of exodus of healthcare practitioners to other countries or private practice, which has contributed to the poor staffing levels in the country. They noted the challenge of finding eye specialists to work in the country, given that the Swaziland government offers uncompetitive salaries and incentives compared to its neighboring countries.

The lack of eye care practitioners is one of the main reasons for poor eye care service delivery in Swaziland. The Ministry of Health and Social Welfare (MOSHW) has attempted to recruit foreign ophthalmic nurses from Southern African Development Community (SADC) countries, which has not been successful, as they also do not have enough eye health personnel, as indicated by a report by the Director of Health Services and Information.<sup>17,18</sup>

As with other health personnel, there is an uneven geographic distribution of eye care professionals, with most being found in the mainly urban Hhohho Region. The consequence of a skewed distribution of professionals is poor access to health care for children in the rest of the country. The lack of a functional referral system creates challenges to providing inappropriate numbers of personnel at each level. This results in there being insufficient staff to cater to those presenting for eye care, particularly children. Eye health care is not prioritized by the government, with government hospitals not having eye clinics and there being no budget to building new eye clinics or equip them. Table 2 shows the distribution of eye health care professionals in Swaziland per region in the public sector and mission clinics, as indicated by the director of health services as well as the clinic assessment questionnaire.

No paediatric ophthalmologists are employed in the country, with this category not being mentioned in the Human Resources for Health Strategic Plan 2012-2017, despite the WHO recommending 1 per 10 million population. The WHO advocates for a team approach when dealing with child eye health care, and a pediatric team should comprise of an experienced optometrist in refracting children, ophthalmologist, pediatric ophthalmic nurse, anesthetists, orthoptist, low vision and rehabilitation specialist.<sup>19</sup> Ophthalmic services without these professionals complementing each other results in inadequate eye health services.

Swaziland has no medical schools and therefore relies on neighboring countries to train personnel, such as doctors, optometrists, ophthalmic nurses and ophthalmologists. The government has not prioritized training for health professions other than medical doctors.<sup>2</sup> The Human Resource for Health Strategic Plan 2012-2017 indicated the required human resource projections for health workers, with eye care professionals being excluded. The absence of information relating to primary and secondary eye care facility resources makes it difficult to compare the current eye health human resource to those recommended by Vision 2020 with regards to eye health provider population ratio.

The Director of Health Services was not be certain about the deficit in terms of the required numbers to provide adequate eye care service, and highlighted the need of a coordinator to serve as focal point in addressing these issues. Evaluations to determine the eye workforce are done annually, as in the other health disciplines, with an increasing number of optometrists being recorded, and an ophthalmologist of Malawian citizenship having been employed. Four nurses were awarded bursaries to enroll for the ophthalmic nursing course in Malawi, which only occurs when funding is available. The scholarship program is not dictated by the need of eye and general health professionals but by availability of funds, with the Ministry of Education and Training (MoTE) not determining the enrolment number in each required field, as indicated by the Director of Health Services.

The MoTE is mandated to provide training of health professionals with the assistance of MOSHW. However, the relationship between the two Ministries has not been defined, as no policy or plans exist to guide HRH production. The MOSHW therefore has no plan to solve the chronic shortage of eye and general health professionals, and the Director of Health Services noted that ophthalmic nurses were often lost in the system when promoted to non-optometric positions.

The main focus of the Ministry of Health has been training general nurses, many of whom are employed by private hospitals due to the poor working conditions in the public sector.<sup>2,20</sup> A collaboration was also formed with the Christian Blind Mission (CBM) to evaluate and monitor ophthalmic services, its mandate being to identify the number of staff required to provide adequate services and to serve as a focal point in addressing these issues. Their findings indicated that strategies that seemed to be on track were hindered by the resignation of the eye health coordinator who initiated programs that reached most people in need of ophthalmic services, such as outreach services. School screening efforts initiated by the Ministry of Health were intended to identify children with visual defects in communities were an important component. However, problems associated with managing follow-ups and analysing data from the Ministry of Education that would inform the programmes were inadequate, to the extent that sponsors withdrew due to the failure to produce accurate statistics. Poor recognition of the importance of eye health services, especially regarding deploying nursing staff and timeously to respond to complaints, has also been reported as a major concern by the clinic staff. Regardless of the cessation of these projects, some equipment has been bought and distributed among the hospitals' eye clinics, although it has been reported to be inadequate by clinic staff, this being indicated by the Director of Health Services.

### ***Eye health financing system***

An ideal health financing system is the one that has adequate funds to deliver equitable access and utilization of services without any payment burden on patients.<sup>8</sup> However, Swaziland's health budget is insufficient to cater to all its citizens' health care needs.<sup>16,21</sup> This situation is compounded by the HIV/AIDS epidemic, with Swaziland having one of the highest incidences in the world, which consumes a considerable portion of the health budget.<sup>4,12</sup> The national health budget expenditure is based on curative rather than preventive health interventions, with 72% being spent on the former.<sup>16</sup> Swaziland depends on donors for eye health funding and adopts strategies or priority programs for specific conditions at the expense of others.<sup>22</sup> Inadequate financial resources often impacts on inadequate management capability, which has contributed to the poor state of the health care system.<sup>12,18</sup>

The National Health Policy of 2006 advocated a balanced allocation of resources to promotive, preventive and curative services, which is currently not happening.<sup>7,16</sup> It is therefore important to note that the decline in health expenditure is occurring at a time when the demand for health services is increasing due to infectious diseases. This has led to an increase in patients' loads, long queues, shorter consultation times and a reduced quality of healthcare.<sup>16,18,20</sup> Information obtained in the interview with the Director of Health Services about the unequal distribution of funding between preventive and curative care suggests that poor financial planning contributes to the failing health system in Swaziland. Managers reported being overwhelmed with duties and not being given the necessary support by both their superiors and junior staff.

The lack of informed data on eye conditions, and the neglect of children living with visual disability, may be the consequences of the absence of appropriate policies to guide ophthalmic service planning and delivery. Facilities that should provide tertiary services lack specialized equipment due to poor funding, resulting in few eye surgeries being performed, particularly among children. With a non-functioning referral system, the lower levels of care that are expected to support the tertiary facilities remain inadequately prepared to do so. Eye care interventions for children are expensive, as other specialists are often required to attend to their visual needs, such as cataract extraction, which are more expensive than adult eye surgery.<sup>19</sup>

MTN Swaziland, the international cellular network provider, sponsor some children with standard glasses that are imported, with custom made spectacles only being made by private laboratories, which are costly. Children with differing visual deficits between the two eyes are neglected (*e.g.* anisometropia), making it pointless to screen them for a number of diseases when they cannot access relevant services because they are required to pay for them.

### ***Eye health medical supplies and technologies***

Equitable access to quality medical supplies and technologies that is affordable, safe and scientifically sound is ensured by a well-functioning health system.<sup>8</sup> Data about the services offered at every primary health centres is essential to assess their performance and progress in delivering the highest level of health services. The higher the level of health care, the more advanced the equipment, skilled human resources and functional referral system required.

The process of setting up eye clinics with proper equipment has been slow due to the recent global financial crisis, as indicated by key health informants. However, with the meagre budget available, essential machines have been purchased and distributed among the government hospitals' eye clinics, such as Piggs Peak and Hlathikhulu Hospitals. In eye clinics where equipment was available, it was either not working properly or requires servicing and maintenance, which compromise the quality of care given to patients. Most government eye clinics do not have eye screening equipment, such as a penlight torch, prism bar, tangent screen, fundus camera and optical coherence tomography. The HODs in the respective eye clinics highlighted that the shortage of this testing equipment affects the appropriate rendering of eye care service. Drugs and pharmaceutical supplies in all the facilities offering eye services was highlighted as one of the problems encountered daily, and has contributed to poor eye health service delivery. It can take months for drugs to be replaced, with the eye clinic staff being expected to carry out their duties without it.

### ***Eye health information system***

The production, analysis, dissemination and utilization of reliable and timely information on health determinants, health status and performance is generally ensured by a well-functioning health system.<sup>8</sup> In the absence of such a system in Swaziland, little research has been conducted to establish the magnitude of visual impairment and blindness, with the country largely relying on the WHO estimate on the causes and consequences of eye disorders. Responses from the key informants indicated that data from the eye clinics is not distributed to other Ministries that could make use of such information in their planning. In addition, no facilities receive feedback from the MOSHW regarding the reports that are submitted by the clinic staff every six months, nor are there minutes of meetings and workshops with the associated decisions and action plans, which makes follow-up extremely difficult. There are also no opportunities to share information regarding case management among the eye health staff at the various levels, nor does the Ministry of Health assist health facilities with information that could be used for planning and resource allocation.

Officials in the MOSHW acknowledged that no attempt has been made to disseminate information about the roles and responsibilities of eye professionals to the public, or about awareness campaigns to prevent childhood blinding diseases. In addition, both heads of school health in the Education and Health Ministries acknowledged that they have not initiated any programs or project on awareness about childhood blinding diseases in schools. The Head of School Health in the MOSHW acknowledged not knowing about the duties of optometrists for many years until the coordinator was employed and assisted in school screening. The School Health HOD in the MoTE was uncertain about the extent of problems caused by child eye health issues and its consequences. He acknowledged that child eye health issues should be a priority, as children require their visual sense to participate at school. However, the eye care coordinator left the position in 2013 and has not been replaced. The key informants raised concerns about initiating media-based awareness campaigns to inform people about the eye services offered by government clinics due to the envisaged large number of patients that would require services but could not be attended to due to a lack of staff.

The supply strategy is often adopted in health service provision, whereby health professionals are capacitated in the broader aspects of eye health to improve access.<sup>22</sup> Swaziland's neighboring countries



have advocated for capacitating general medical practitioners due to the shortage of ophthalmologists to alleviate the burden carried by eye health workers. However, this has not been done in Swaziland, and no workshops or Continuing Practitioner Development (CPD) program have been conducted to capacitate eye health professionals. Of concern is the lack of knowledge among eye health professionals about children's eye diseases, as established in the current study, although many participants reported familiarity with self-limiting conditions, such as allergic conjunctivitis.

The interview responses indicate that some of the eye health professionals are not sure whether or not to dispense glasses to children because they are concerned about child's age, and when children should present for eye examination. This highlights the fact that they are ill-informed about eye health care for children, who are being left uncorrected, which impacts negatively on their education, employment and social opportunities. Health professionals appear to provide inappropriate advice regarding eye care, which contributes to the increasing incidence of visual impairment and blindness in the country.

### ***Vision 2020 process indicators for Swaziland***

The Vision 2020 target recommends at least one bed for every 20000 population in an eye ward, with one optical workshop and operation eye ward.<sup>23</sup> Swaziland is divided into four regions with varying population numbers, the WHO statistics suggesting that there are approximately 1619 hospital bed in Swaziland, which is insufficient due to the high burden of HIV/AIDS and TB.<sup>18</sup> The information obtained in the facility assessment questionnaire indicated that only 47 beds are allocated to eye patients, these being at the Mbabane Government and Good Shepard Hospitals. These are the only facilities that offer cataract and minor eye surgery, the number of beds available being insufficient for the whole country. An analysis of the eye care beds per region indicates that they are inadequate to cater to those in need. While only two regions have theaters with a few skilled personnel, many are left with no option but to either wait for the staff to visit the nearest eye health facility, or to travel long distances for the appropriate surgery.

### **Conclusions and recommendations**

This situational analysis shows that much needs to be done in eye care to achieve the Vision 2020 goals in Swaziland. Proportional distribution of eye health services is warranted, which is in line with the Vision 2020 recommendation, to ensure equality in access to services for both rural and urban dwellers. Efforts should be made to employ general ophthalmologists to attend to children. Cost is a significant barrier to accessing eye care for those living below the poverty line who cannot afford to pay for services, including glasses. Partnerships, including government, NGOs and the private sector are necessary for scaling up initiatives that will ensure children access eye health services without their parents being burdened with the cost of care. There is also a need to provide financial assistance for children warranting tertiary services across the border, specifically into South Africa. A well-coordinated and sustainable referral system linking children in rural communities to the highest level of eye care of pediatric service is essential. Training teachers to conduct vision screening may relieve the burden from eye health professionals. Capacitated managers in the Health and Education Ministries need to develop teacher training curriculum, including eye health that is accompanied by relevant health and education policies to be utilized in the school health program. However, given the lack of finances available in this resource constrained small country, support of national and international organizations for better coordination of eye health program between the two ministries is essential to ensure that its health burden in general, and eye health in particular, is addressed.

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**Table 1. Services offered in evaluated eye clinics in Swaziland.**

| <b>Region</b> | <b>Eye clinic Facility</b>               | <b>Services, specifically for children</b>   |
|---------------|--|--|
| Hhohho        | Mbabane Hospital                         | Refractive services, Anterior segment and cataract surgery as well as low vision services for all ages |
|               | Piggs Peak Hospital                      | Refractive services  |
| Lubombo       | Good Shepard Eye Clinic                  | No refractive services, conducts only minor anterior segment surgeries and cataract surgery            |
| Manzini       | Ekululameni clinic                       | Refractive services for all age groups   |
| Shiselweni    | Hlathikhulu Hospital                     | Refractive and low vision services for all ages  |
| Swaziland     | Offered by private services in Swaziland | Contact lens fitting<br>Vision rehabilitation services   |
| South Africa  |  | Other complicated cases, <i>e.g.</i> vitreous and retinal detachment etc                               |

**Table 2. Distribution of eye health care workforce in Swaziland per region.**

| <b>Eye services</b>   | <b>Regions</b> |                |                   |                |              |
|-----------------------|----------------|----------------|-------------------|----------------|--------------|
|                       | <b>Hhohho</b>  | <b>Manzini</b> | <b>Shiselweni</b> | <b>Lubombo</b> | <b>Total</b> |
| Population (2012)     | 331 734        | 360 228        | 241 365           | 250 000        | 1 113 327    |
| Urban/rural status    | Urban          | both           | rural             | rural          |              |
| Public/Mission/NGO    | Public         | Mission        | Public            | NGO            |              |
| Number of eye clinics | 2              | 1              | 1                 | 1              | 5            |
| 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           |

**Figure 1. The WHO health system building blocks and the consequences of their absence in Swaziland.**

