Setting up an Eye Service in the Republic of Benin

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Objective

The reason for writing this paper is to record the evolution of a new eye service in a West African country. Some of the problems encountered are discussed.

Introduction

The Republic of Benin, formerly Dahomey, is situated on the west coast of Africa, bordered by Nigeria to the east, Togo to the west and Burkina Faso and Niger to the north. Benin is less than half the size of the United Kingdom (112,622 km²), with a population of around five million, 64% living in rural areas. Life expectancy is estimated at 54 years. The gross national product was 370 US $ per head in 1994.

Health care is provided by the government medical service through hospitals and bedded dispensaries in the towns, by a network of independent and church-based hospitals and by private practitioners (doctors and nurses) in the cities. There is a medical school in Cotonou producing 25 doctors each year. There is no post-graduate speciality training in ophthalmology.

Over half the population (56%) lives by agriculture and fishing. The main crops are maize, rice, yams, peanuts and beans. Mangoes and papaya are found throughout the country, and, in the south, citrus fruits, coconuts, bananas, plantains and pineapples are abundant. Cotton and palm oil are exported.

The climate in the south is tropical, warm (23–34°C) and very humid (80–95%) with rain (1100 mm per year) during nine months of the year. The north is drier, less humid, with only five months of rainfall. In December and January, a dry cold wind, full of dust (harmattan) blows, especially in the north.

Ophthalmic services are inadequately developed. In 1990 there were five Beninois ophthalmologists, four based in the University Hospital in Cotonou (economic capital), and one in the regional hospital in Porto-Novo (administrative capital). Both these cities are on the coast and 30 km apart. There were no other ophthalmologists (national or expatriate). However, the church hospitals at Bemberike (530 km north of Cotonou) and at Tanguieta (585 km from Cotonou) both had busy eye clinics. There were no other permanent ophthalmic services. Of approximately 250 cataract operations carried out in 1990, 80% were operated on in these two northern hospitals.

The 200 bed regional hospital in Abomey (130 km north of Cotonou), Centre Hospitalier Départemental, was built in the 1980s. A small ophthalmic consulting room was fully equipped but there was no available ophthalmologist. Once or twice a month an ophthalmologist from Cotonou would hold an outpatient session. The author was seconded by Christoffel Blindendemission (CBM) to take over the clinic.

The number of eye surgeries increased from an average of 7 per week in 1991 to 14 per week in 1993 and 21 per week in 1995 (Table 2). Table 3 shows the major types of surgery performed. Cataract surgery (ICCE) predominated, with 52% of all cases in 1995. Operative treatment for chronic open angle glaucoma is the only practical alternative in rural Africa, as supplies of beta-blockers or pilocarpine are expensive when available and patient compliance over a long period is very poor. Our usual anaesthetic was a retrobulbar block, using 2% plain lignocaine. The complication of retrobulbar haemorrhage occurred in less than 1:200. We could have operated on many more cases of pterygium but our policy was to advise surgery only when the visual acuity was reduced by the pterygium.

2. Outpatient Work

After a slow start, the number of new patients increased (Table 1) so that by 1995 the team was seeing up to 50 outpatients a day, including 15–18 new patients.

3. Eye Surgery

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Table 1: New Eye Patients in Abomey Hospital, 1989–1995

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<td>58</td>
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Table 2: Cataract Operations in Abomey Hospital, 1990–1995

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<tr>
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<td>120</td>
<td>130</td>
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Table 3: Types of Surgery, Abomey Hospital, 1990–1995

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<tbody>
<tr>
<td>Cataract</td>
<td>120</td>
<td>130</td>
<td>140</td>
<td>150</td>
<td>160</td>
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<tr>
<td>Glaucoma</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td>25</td>
<td>30</td>
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<tr>
<td>Other</td>
<td>5</td>
<td>10</td>
<td>15</td>
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The sex distribution in the cases of cataract surgery, showed an equal distribution. The first hundred cases were accumulated over 14 months, whereas four years later it took only three months.

At the beginning there were four male glaucoma patients for every female, but this reduced over time. Table 4 shows the age and sex distribution of the first and last hundred patients having trabeculectomy in Abomey, 1990–1996. The first hundred cases were accumulated over a period of two years and ten months. The last hundred had surgery over a ten month period.

Over the six years, 188 children (under 15 years) underwent eye surgery. Of the 287 operations, 96 (33%) were for cataract and 56 (19.5%) for glaucoma (Table 5). The usual anaesthetic was ketamine, given either by the IM or IV route. There was one anaesthetic death in a girl of four.

Of the 96 cataract operations in children, 42 patients had a bilateral procedure and 60% of the cataract operations were performed in children over the age of five years. Of the 56 trabeculectomies on 22 patients, all but one patient had a bilateral operation. Most eyes (75%) were operated on before the patient was a year old. Five children needed second bilateral procedures and three needed a repeat trabeculectomy in one eye.

4. Outreach work

One day a week was reserved for outreach work. A typical day would involve driving a hundred kilometres to a small town, examining between 70–150 patients and driving home in the afternoon. Clinics were held in dispensaries, small hospitals, schools or village centres. The car was donated by CBM.

Discussion

In March, 1990, a national survey was undertaken by the World Health Organization to measure the prevalence of blindness (visual acuity < 3/60), and visual impairment (<6/18–3/60) and to assess the essential ophthalmic requirements for Benin.1

The principle results were:

- Prevalence of bilateral blindness 0.63% = 28,000 people
- Prevalence of visual impairment 2.5% = 120,000 people
- Prevalence of unilateral blindness 1.1% = 51,000 people

Cataract was the principle cause of bilateral blindness (54%) and visual impairment (64%). Glaucoma accounted for 15% of bilateral blindness and corneal pathology was responsible in 11%.

Seventy-two thousand cases of cataract needed surgery, of which an estimated 15,000 were already blind and 580,000 people were in need of spectacles. Trachoma was found in the north of Benin and caused 1% of blindness. However, an estimated 4,000 people have trichiasis and are at risk of losing sight.

The report ended with the following conclusions:

1. The need to establish a national committee for the prevention of blindness.

2. The need for co-ordinated action to reduce blindness from cataract by developing surgical services in regional hospitals and by the training of personnel.

3. The large need for the provision of affordable spectacles by the creation of optical workshops.

The author’s priorities upon arrival in Abomey were therefore:

1. To establish an eye care service to all sections of the community by the use of appropriate technology at affordable prices.

2. To emphasise the surgical treatment of cataract, glaucoma and trichiasis.

3. To train nurses in eye care.

4. To develop an outreach service by holding eye clinics in peripheral towns and to perform eye surgery where suitable facilities existed, as close to the patients’ homes as possible.

Many African countries have only one ophthalmologist per million population and they usually work in the major cities. Benin in 1990 was therefore typical in this respect, with nearly five million people and five national ophthalmologists in the capital cities. The number of surgeries performed was low because the cost of surgery to the patient was high and because surgical equipment (instruments, sutures, etc.) was hard to obtain. By 1996 Benin had a ratio of one ophthalmologist per 400,000 population.
It is important when setting a scale of patient fees not to erect a financial barrier to the patient. In Abomey we set the cost of cataract surgery at around half a month’s average salary. A pair of spectacles was sold for a sum equivalent to three days work. Our spectacles were imported ready-made from India, and the hospital made a small profit on each pair sold which was used to subsidise other eye care services.

The more eye surgery performed, the cheaper each operation may become. CBM provided surgical equipment, medicines and sutures. However it would have been possible to purchase these items using patients’ fees. The capital to purchase the vehicle for outreach work however could not have been raised locally. The revenue from a busy surgical eye department can be used to subsidise other eye care services.

Although this new service became busy that needs to be faced. Difficulties that still need to be overcome include the equipping of regional hospitals with surgical and diagnostic materials for eye work, the practical surgical training of ophthalmologists in cataract and glaucoma surgery and the encouraging of such personnel to serve the population from peripheral hospitals, resulting in a more equal distribution of human resources. Salaries for national ophthalmologists are low. Urban private practice thus becomes an attraction and a necessity for ophthalmologists who have families to support.

At present, eye centres are underused by patients. There are several reasons for this. Cost is certainly a major factor. Low incomes and rising inflation mean that eye care is not affordable to the elderly and blind who are often amongst the poorest members of any society. Basic medicines and routine surgery must be realistically priced. Patients who have travelled long distances should be treated promptly or they will return home never to reappear.

Ophthalmology has low priority in most Ministries of Health. In Africa, mother and child health, malaria, AIDS, tuberculosis and vaccination programmes rightly claim political attention. Prevention of blindness activities, are important and can be made cost-effective and sustainable, providing policy makers and planners take into account both the needs of the patients and those of the health care providers.

Table 5: Eye Surgery – Children Under 15 Years

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<tr>
<td>October 90 – August 93</td>
<td>96 (33.4%)</td>
<td>56 (19.5%)</td>
<td>25 (8.7%)</td>
<td>16 (5.5%)</td>
<td>13 (4.5%)</td>
<td>11</td>
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<td>11</td>
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<td>8</td>
<td>7</td>
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<td>2</td>
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<td>October 95 – July 96</td>
<td>96</td>
<td>56</td>
<td>25</td>
<td>16</td>
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