

The Challenge of Providing Spectacles in the Developing World

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It is estimated that 2.3 billion people worldwide have refractive error. The vast majority of these could have their sight restored by spectacles, but only 1.8 billion people have access to eye examinations and affordable correction. This leaves approximately 500 million people, mostly in developing countries (close to 1/3 are in Africa) and many children, with uncorrected error causing blindness and impaired vision. Many are not aware that there is a cure for their compromised vision, have no one to provide treatment, or cannot afford the appliances they need.

The way to eliminate uncorrected refractive error is through the development of all aspects of a self-sustaining system, including human resources to provide eyecare services; and spectacles, to correct vision.

Refractive Error

In an eye with refractive error (or ametropia), parallel rays of light fail to con-



Recording the spectacle lens powers using the focimeter

Photo: Murray McGavin

verge to a sharp focus on the retina. For the patient this means that their vision is blurred. The error is 'correctable' if a sharp focus can be achieved with the aid of vision correction devices such as spectacles or contact lenses.

Refractive error has only relatively recently been recognised as a significant cause of blindness and impaired vision through the work of Dandona et al¹ and Taylor et al.² At the recent Sixth Assembly of the International Agency for the Prevention of Blindness (September, 1999), L B Ellwein, G P Pokharel and Jialiang Zhao and colleagues confirmed these findings in three separate reports. The results of these studies clearly demonstrate the place for the correction of uncorrected refractive error in combating blindness.

Low or No Cost Spectacles

A crucial element of the effective delivery of refractive eyecare services is the provision of affordable vision correction devices. While there are a number of options for vision correction (e.g., contact lenses, refractive surgery, etc.), spectacles are the simplest and most inexpensive option. However, in many areas of the world spectacles are either not available or are too expensive. While having adequately trained practitioners is essential to providing refraction and eyecare to communities, this care must be supported with the devices needed to restore sight.

The challenge now is to develop ways of supplying good quality spectacles to communities in need. While there are many schemes which involve spectacle supply, for example, collecting used glasses for distribution to developing countries, for any system to be truly effective, it must be sustainable and long term.

The issues in the provision of spectacles are:

- Quality
- Supply (ready made or prescription)
- Distribution
- Cost
- Acceptance

1. Quality

The spectacles need to be of the highest possible quality, including lenses which adhere to ISO standards of power, prism,



Donated spectacles

Photo: Murray McGavin

and power variation; frames which are sturdy and with a metal hinge; and a complete pair of spectacles which are lightweight and attractive. Quality of lenses and frames are critical to their being used effectively, especially by children.

In recent studies in India of spectacle wearers, comfort and attractiveness were significant factors in determining wear patterns.

2. Supply

In providing spectacles to patients there is a choice between ready-made and prescription devices. Ready-mades are convenient for the refractionist and patient, and can be used for spherical distance prescription, and reading glasses where the spherical power difference is less than 0.50D, and the cylindrical power less than 0.75D. However there are issues of cost, availability, quality, re-supply, and applicability.

Prescription spectacles will be needed for approximately 30% of the patient population depending on the criteria used.

Innovative ways of producing prescription spectacles are being investigated. It is anticipated that with a simple system, there will be minimal need for full laboratory set-up and facilities and highly trained technicians to provide custom-made prescription spectacles.

3. Distribution

While spectacles may be readily available in urban areas, the system must ensure that vision correction devices are also available for patients living in rural and remote areas. It is, therefore, necessary to look at every level of distribution:

- National / Provincial
- Regional



A selection of 'designer frames' in Jamaica

Photo: Murray McGavin

- District
- Community

Ready-mades can be made available at the community level, while prescription lenses would require a dispensing laboratory within the district and a technician within the community to fit lenses to frames.

Various delivery models have been devised for the delivery of eyecare and vision correction, e.g., the 'Franchise Model' where potential practitioners are selected, trained and provided with spectacle sets. The franchise guidelines could include:

- Minimum number of eye examinations to be provided in schools and villages
- Low cost spectacles
- Upgrading of the franchisee's training and involvement.

4. Cost

It is anticipated that the establishment of a self-sustaining system of supply of low cost spectacles will provide funds that can be

directed to other programmes such as education or research. However funds will be required from existing funding schemes, charities, industry and/or government subsidy, particularly in the early stages of this scheme.

5. Acceptance

In some communities there are cultural issues regarding acceptance of spectacles, while in other communities wearing spectacles are considered attractive. Public education is the key to acceptance.

Conclusion

Avoidable blindness and low vision can restrict progress in education, particularly literacy; limit motor development in children; affect mobility; limit career opportunities, and restrict access to information. It is a burden on the community and social and income generating services. By correcting uncorrected refractive error we can dramatically improve the quality of life and access to education for many people.

Available and affordable spectacles are a major part of this aim. The issues of quality, supply, distribution, cost and acceptance all need to be examined. Then, the best possible plans and programmes can be developed which will deliver vision to communities in need.

References

- 1 Dandona L, Dandona R, Naduvilath TJ, McCarty CA, Nanda A, Srinivas M, Mandal P, Rao GN. Is current eye-care-policy focus almost exclusively on cataract adequate to deal with blindness in India? *Lancet* 1998; **351**: 1312-6.
- 2 Taylor HR, Livingston PM, Stanislavsky YL, McCarty CA. Visual Impairment in Australia: Distance Visual Acuity, Near Vision, and Visual Field Findings of the Melbourne Visual Impairment Project. *Am J Ophthalmol* 1997; **123**: 328-37.

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Foundation DARK & LIGHT (Founded 1982)

The Foundation gives support to institutions or organisations (not to individuals) that are active in the field of the blind, amongst those with low vision or blind people with multiple handicaps.

The Christian faith is the underlying basis of our mission statement. As Christians we believe that we must strive for justice for our fellow creatures and assist all those who are in need, thus expressing God's love. Every human being should do his utmost to fulfil the mission God has given to mankind, to love God and to love your neighbour as you love yourself.

DARK & LIGHT therefore aims to support projects that:

- Create conditions offering more integrated education to children with visual impairment
- Offer community based rehabilitation or vocational training to visually impaired adults
- Create conditions for improved medical treatment of eye diseases thus combating blindness

- Run programmes for early intervention
- Support the prevention of blindness
- Serve those with low vision or blind people with multiple handicaps.

We use the following criteria to assess applications for financial assistance:

A written application for financial support next year (2001) should be submitted preferably before 1st August this year (2000). It should contain at least the following information:

- Organisational background
- A description of the project
- Aims and sub-aims of the project
- A summary of the planned activities
- Description of the target group
- Budget in both local currency and in US\$
- Audit report (if available)

On receipt of your request:

1. You will receive a confirmation of receipt.
2. We might ask you to supply additional information.

3. You will receive a reply in which the motivation of our decision is specified.

If we decide to provide support to your project we expect you to report on your activities regularly. Details of mutual obligations and commitments will be stated in a project contract in which we will specify (1) our commitment to pay for certain activities and (2) your obligation to carry out and report on agreed activities.

Applications should be sent to our office:

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E-mail: darkandlight@compuserve.com

Web site: <http://come.to/darkandlight>

If you write a short letter to our office address to introduce yourselves we will send you our letter of introduction and a questionnaire. These should be helpful in making an application that provides us with sufficient and relevant information.

G Th ten Hove, Director
Foundation DARK & LIGHT

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