Optical services through outreach in South India: a case study from Aravind Eye Hospitals

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The need to correct refractive errors

Refractive errors are a priority within the global initiative for the elimination of avoidable blindness, VISION 2020: The Right to Sight.[1,4] Until recently, refractive errors never figured as a cause of vision impairment or blindness in the surveys; this was probably due to WHO's categorisation of visual acuity as based on best corrected vision, presumably because of the ease (from a technical perspective) with which it can be addressed. Thus refractive errors had not grabbed the attention of policy-makers and service providers.

Based on conservative 'guess-timates', in India alone it is estimated that 145 million people (about 14 per cent of the population) would benefit from correction of refractive errors (see Table 1). This includes presbyopic correction, which accounts for the major portion. However, only about 10 per cent of them, or about 1.5 per cent of the population, have had access to refraction services and are actually wearing spectacles. For those with higher refractive errors affecting distance vision, more spectacle usage is reported, but is still only at 35 per cent.[2] In developed countries, the percentage of spectacle-wearers ranges from 30 to 50 per cent of the population.

There is an urgent need to increase refraction services in a comprehensive manner. One strategy would be to offer these services at all patient-contact opportunities, in the hospital or other fixed facility settings (for example, Vision Centres) and in outreach settings. The focus of this paper will be on optical services through outreach, based on the experiences of Aravind Eye Hospitals in South India.

Aravind outreach services[3]

Eye camps for screening were introduced in Aravind in 1976 and continue to be held throughout the year. Most camps are held over weekends so that the people are free to attend, venues such as schools are available, and volunteers can offer their time. The community takes responsibility for financing and executing all non-ophthalmic activities, such as publicity, getting necessary permissions, organising a screening site, volunteers, furniture, and local hospitality. The place, date and time are fixed through mutual consultation. All these are guided and co-ordinated by a team of full-time organisers of the outreach department of Aravind Eye Hospitals. The outreach includes schools, industries and offices, and specifically targets correction of refractive errors.

Aravind Eye Hospitals

Trained staff refract the referred patients, note down their refractive error and write out the prescription. INDIA

Optical services through outreach

Aravind eye camps are comprehensive, refraction services being an integral part. Initially, only general community outreach camps were held. Later, school screening was added, where school teachers are trained to carry out the first level screening and the selected children are then screened by the ophthalmic team. Outreach was then extended to factories and offices, prompted by a study done by Aravind which showed a significant increase in productivity following refractive error correction (mostly presbyopic) amongst factory workers. In the outreach to schools and industries, a follow-up visit is done a month after dispensing the spectacles, to see if people are using them and to address any problems.

Through these outreach activities, three distinct target groups emerged: the general

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Table 1. Estimation of potential optical services beneficiaries

Age groups	Population distribution in India		Estimated prevalence of refractive error	Desired/ feasible uptake of services	Estimated potential users
0-4 yrs	10.5%	107,940,000	2%	0%	0
5-14 yrs	20.6%	211,768,000	5%	100%	10,588,400
15-44 yrs	48.5%	498,580,000	10%	80%	39,886,400
45 & above	20.4%	209,712,000	90%	50%	94,370,400
Total	**100%**	**1,028,000,000**			**144,845,200**

Table 2. Optical services through outreach in the year 2005

Type of Eye Camp	Target Group	Number of camps	Patients examined	Number of spectacle prescriptions (% of those examined)	Number of orders (% of prescriptions made)	Delivered on the spot (% of those ordered)
Community eye camps	General community but predominantly attended by older adults due to stronger focus on cataract services	1,331	436,778	52,438 (12.0%)	42,333 (81%)	35,007 (83%)
School eye camps	School children – 100% screening	168	122,150	4,380 (3.6%)	4,338 (99%)	2,082 (86%)*
Industry/office eye camps	Working-age adults – voluntary attendance	116	27,695	6,687 (24.2%)	6,197 (93%)	4,804 (78%)

* In the case of spectacles for school children, 1,916 spectacles were provided by District Blindness Control Societies or Lions Clubs. The 86 per cent of on-the-spot delivery only applies to the 2,422 orders taken by Aravind.

community, school children, and working-age adults. The clinical work at the outreach is essentially the same for each group, but there are differences in how these camps are organised. Table 2 presents statistics on refraction services through outreach for these three target groups in 2005.

The activities involved in providing complete refraction services can be broadly grouped into determining the refractive error and dispensing the spectacles according to the prescription. The challenge is to make this happen efficiently in an outreach setting.

i) Determining the refractive error

The patients are registered, a medical record is created and an identification card is given to each patient. The visual acuity is measured, and then the patient is examined by an ophthalmologist who decides to send the patient for refraction, intraocular pressure measurement or checking lacrimal patency. The refraction is carried out in portable dark cubicles which measure 4 x 4 x 7 feet. Trained staff refract the referred patients, note down their refractive error and write out the prescription. It is then verified by the ophthalmologist. The minimum cut-off for when a prescription is considered necessary is 0.5 dioptre. On average, 10 to 15 per cent of those screened at these camps get a prescription for refractive correction.

ii) Dispensing the spectacles

An optician (or dispensing technician) counsels patients about wearing spectacles and assists them in choosing an appropriate frame. The average acceptance rate is about 90 per cent. The average price paid by the patient for a pair of spectacles is about Rs. 150 (US $3.50). An average camp screening about 500 patients should usually yield about 60 to 75 persons with refractive errors.

Once the order is booked, the optician selects the prescribed lenses from the inventory, then marks and edges them to fit the selected frame using a portable edging machine. The spectacles are delivered in approximately half an hour. For special orders, and when the prescribed power is not in the inventory, the orders are booked, processed at the base hospital and delivered by mail. A well-predicted lens inventory enables more than 80 per cent of the orders to be delivered on the spot.

Aravind Eye Hospitals

Trained opticians accompany the camp team with the required equipment and a supply of frames and lenses. INDIA

Some lessons learnt in outreach services

1. It is important to provide spectacles during the outreach, if possible. In the early years, the patients were only given a prescription and they were required to buy spectacles from wherever they could. It was observed that the actual uptake was very low. Investigation revealed that the cost involved in procuring the spectacles, including real costs (transportation, etc.) and lost wages, was significantly more than the cost of the spectacles. Aravind then booked the orders, processed them at the base hospital and returned on a predetermined date to deliver them. This marginally increased the uptake. The experience with ready-made spectacles was similar. We therefore decided to give spectacles on the spot, as per the prescription, in the patient's choice of frame. This proved to be very successful. Today, trained opticians routinely accompany the camp team with the required equipment and an supply of frames and lenses; they are able to dispense over 80 per cent of the orders on the spot (see Table 2). In this way, we are able to ensure that patients diagnosed with refractive error actually receive the correction.

2. Willingness to pay

The 'vanity' component of the spectacles makes people willing to pay for them. In our experience they do not prefer ready-made spectacles.

3. Sustainability

Profit margins from the sale of spectacles can subsidise other services offered and thus contribute to programme sustainability.

Table 3. Resources required for optical services through outreach

Resource category	Details
Diagnostic (to determine the refractive error)	• Snellen charts • Torchlight • Trial lens set • Streak retinoscope • Portable cubicle to create a dark space • Stationery to issue prescriptions
Human resources	• Refractionists/Optometrists • Dispensing technician – for counselling, booking the order and fitting
Optical dispensing – equipment	• Portable edging machine • Screwdrivers • Frame warmer – for plastic frames • Adjustment pliers • Trial lens set – to check the power of the lens (quality control) • Marking, chipping and cutting implements • Display trays and table mirror
Optical dispensing – supplies	• Assortment of frames (3 frames per expected order) • Stock mix of lenses reflecting the refractive errors in the target group of the outreach (10 lenses per expected order) • Stationery for order booking and billing
Power, water, basic furniture, etc.	• Provided by the local group organising the camp

Conclusion

The increasing focus on refraction services, brought about by the Global Initiative VISION 2020: The Right to Sight, and the positive changes in the economy and literacy levels, are creating a favourable environment and a great opportunity. Optical services through outreach offer a viable and low-cost strategy to make a quick impact on refractive errors.

References

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