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## **'Vision Centre' as a strategy to provide eye care services to underserved populations: Results from Satna district of Madhya Pradesh, India**

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### **Introduction**

Blindness and vision impairment remain major public health problems in India.<sup>1</sup> Conventional approaches to address avoidable blindness in India have focused largely on age-related cataracts and uncorrected refractive errors as these constitute the major proportion of avoidable blindness in India.<sup>2</sup> Strategies addressing avoidable blindness have focused on affordability, availability and accessibility and included a mix of hospital based curative services and community based screening services. Poor outcomes at outreach or community based surgical camps led to the abandoning of that particular strategy to be replaced by a strategy that utilized community based screening and surgery at the base hospital.<sup>3</sup> Several innovations were added to this approach, including provision of free transport and food and organization of follow-up camps to address the needs of surgical patients.<sup>4</sup> However, the utilization of eye care services still remains dismal in India.<sup>5</sup>

The VISION 2020: Right to Sight initiative has initiated 'Vision Centres' as a strategy to provide primary eye care services, focused on identification of eye disorders and correction for refractive errors. This strategy that addresses issues pertaining to availability of affordable and accessible services and distribution of ophthalmic support services is expected to improve utilization of eye care services and impact the prevalence of blindness. We designed a retrospective study to examine the usefulness of Vision Centres in providing primary eye care services. To the best of our knowledge, there is little published evidence on the usefulness of Vision Centres as a strategy to provide eye care services.

### **Methods**

The Vision Centres set up by Sadguru Netra Chikitsalya (SNC) of Chitrakoot, which were functional for at least a year, were included in this retrospective study. Each Vision Centre was located at least 40 kilometers away from the base hospital and in locations where eye care services were not available till then. Each Vision Centre provided eye care services through a trained vision technician, who had been trained for a period of 18 months, including theory and practical hands-on sessions. Vision technicians were candidates who had completed the 12th grade (science stream) and had been selected after a written test and interview. They were trained to measure visual acuity, assess the anterior segment through the use of a slit lamp, measure intraocular pressure by tonometry, and perform posterior segment examination by a direct ophthalmoscope and refraction using streak retinoscopy. Vision technicians, after refraction, prescribed and dispensed appropriate spectacles. Patients with other eye problems were referred to the base hospital for further examination and appropriate management.

We examined the records at the Vision Centres retrospectively to collect information on the number of persons screened there including new and review patients, the number of persons identified with refractive errors, spectacles prescribed and spectacles dispensed, and the number of persons referred to the base

hospital and their diagnosis. Records at the hospital were examined to determine utilization of services after referral by the vision technician and agreement between the diagnosis of the vision technician and the ophthalmologist.

## Results

We collected information on patients screened at 5 Vision Centres for the year April 2007 to March 2008. Three Vision Centres were located in Uttar Pradesh and two in Madhya Pradesh. The mean distance of the Vision Centres from the base hospital was  $66.6 \pm 33.79$  kilometers (median 46.00 kilometers, range 40 to 105 kilometers). A total of 11,331 persons were examined at the 5 Vision Centres during this period (Table 1). Of the review patients, 508 (14.52%) were follow-up patients who had earlier visited the base hospital, 1069 (30.55%) were follow-up of patients who had earlier come to the Vision Centre and 1922 (54.93%) were follow-up of patients who had earlier attended a camp organized by the base hospital. The mean outpatients were  $2966 \pm 451.83$  (range 2313 to 3370) and mean new outpatients were  $1566.40 \pm 292.19$  (range 1243 to 2020). The mean number of persons diagnosed with refractive errors was  $1216 \pm 129.86$  (range 1076 to 1415).

Spectacles were prescribed to 5357 persons (88.11%) with refractive errors. Spectacles were dispensed through the Vision Centre to 4723 (88.17%) of the 5357 persons who had been prescribed spectacles. A total of 2914 (61.70%) of these 4723 persons paid for their spectacles.

Vision technicians at the Vision Centres referred 631 (5.57%) persons to the base hospital for further care. The mean age of those referred to the base hospital was  $57.21 \pm 18.11$  (range 3 days to 95 years); 291 (46.12%) of them were female.

A total of 524 (83.04%) of these 631 referrals were for age related cataract; 283 (44.85%) of those referred utilized the services at the base hospital, including 226 persons (43.13% of the persons referred for cataract) who underwent cataract surgery. One hundred and thirty nine (49.12%) of those who utilized services at the base hospital after referral from the Vision Centres were female. Gender did not significantly differ among those who utilized or did not utilize services at the base hospital (chi square test  $p=0.17$ ). Utilization of services at the base hospital after referral by the vision technician was not significantly different among those above 40 years of age (chi square  $p$  value= $0.38$ ). However, only 29 (31.18%) of the 93 persons aged 40 years or younger who were referred by the vision technician utilized services at the base hospital ( $p=0.02$ ).

The diagnosis of the vision technician matched perfectly with the diagnosis made by the ophthalmologist at the base hospital in 262 (92.58%) cases. Ophthalmologists at the base hospital considered only 6 (2.12%) of the 283 persons that utilized services at the base hospital (after referral by the vision technician) as normal.

**Table 1. Persons screened at the Vision Centres**

Parameter	N (%)
Total outpatients screened at Vision Centre	11,331
New outpatients	7,832 (69.12%)
Review outpatients	3,499 (30.88%)
Refractive errors	6080 (53.66%)

**Figure 1. Persons screened at Vision Centres by month and place**

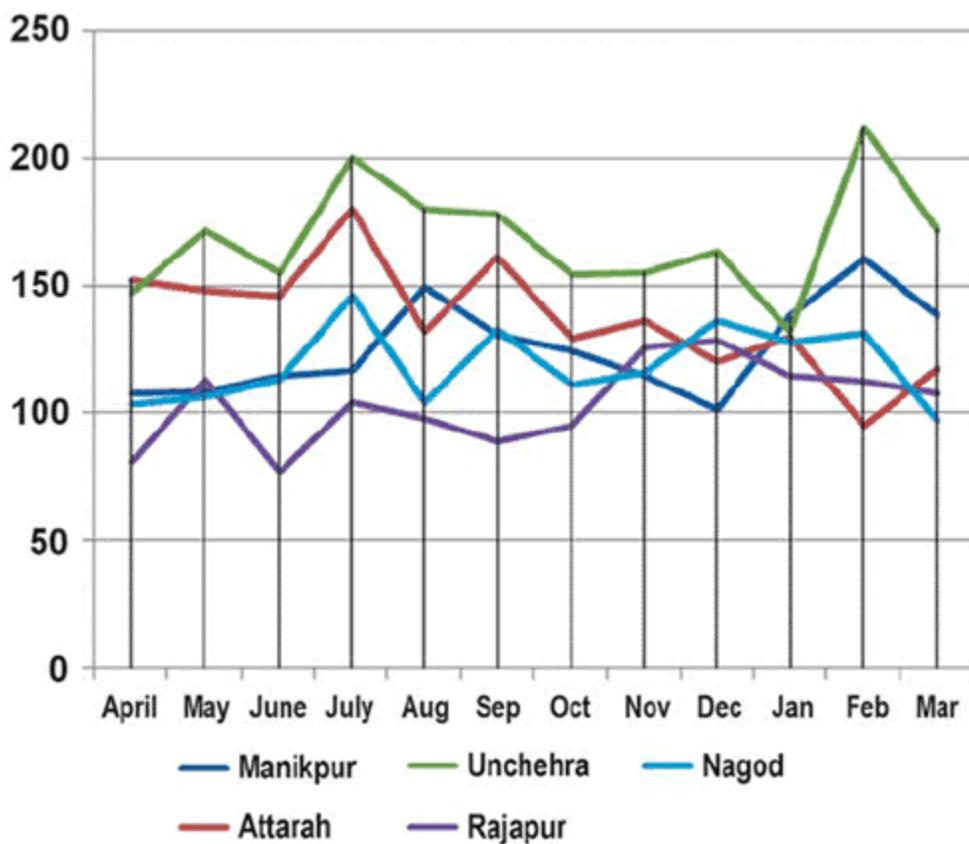
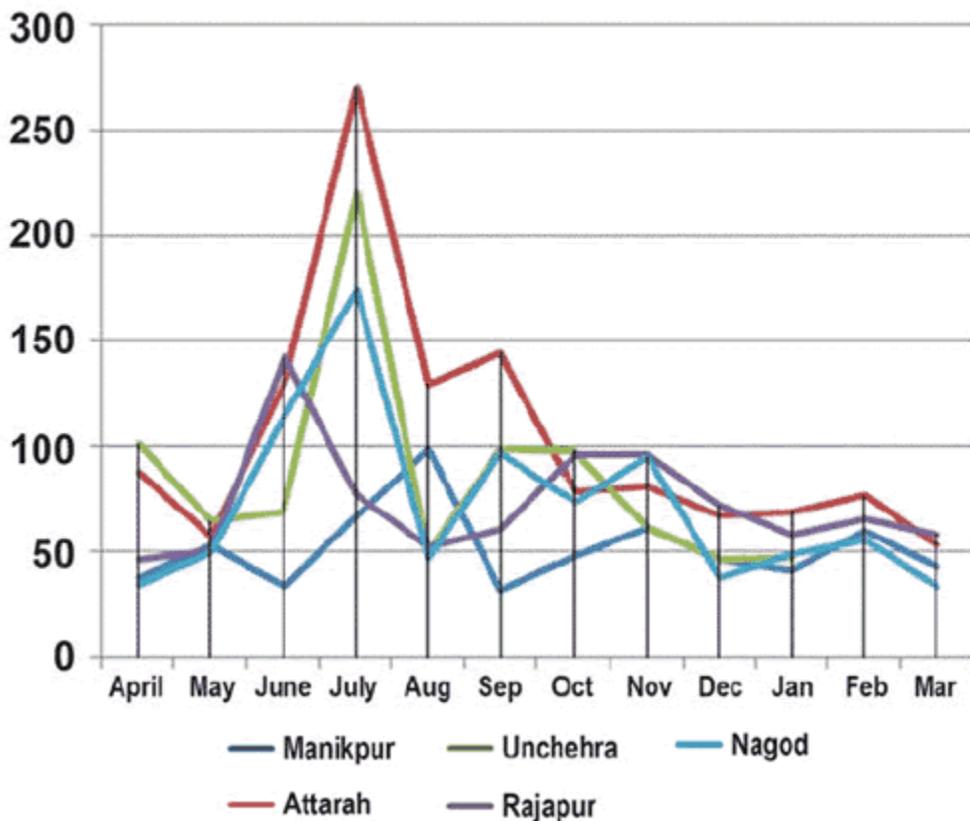


Figure 2. Spectacles dispensed at Vision Centres by month and place



## Discussion

Our experience indicates that the Vision Centre is a good strategy to provide primary eye care services. On an average, each Vision Centre screened 3000 persons annually. This number may increase as people become more aware of the services offered. The Vision Centre was a useful strategy for the identification and

management of refractive errors. Spectacles were dispensed to over 77.68% of those with refractive errors (41.68% of the overall screened population) indicating the impact of Vision Centres in addressing uncorrected refractive errors.

The Vision Centre is also useful for screening for age related cataracts; however, the impact on age related cataracts may be limited to an extent as people still have to travel to access surgical services. Yet, the number of spectacles dispensed and the number of cataract surgeries advised give an indication of the impact of the Vision Centre in addressing avoidable blindness.

We found that overall utilization of services at the base hospital after referral by the vision technician was 44.85%. This is similar to the utilization of services after outreach camps conducted by us in this region. The Vision Centre, however, has several advantages over an outreach camp. One, trained eye care personnel are available to provide services on all days, unlike a camp that occurs only for a very limited period of time (usually a day). The vision technicians use a slit lamp allowing for a more comprehensive exam than occurs in a camp. The Vision Centre also allows for easier follow up for patients; 30.88% of persons screened at the Vision Centres were review patients. The dispensation of spectacles through the Vision Centre after refraction is an added advantage.

One concern is whether the vision technicians are equipped to screen and correctly identify persons with eye disorders. This will be a reflection of the training as well as the confidence of the vision technician. We found that the diagnosis of vision technicians matched with that of the ophthalmologist in 92.58% cases indicating that the training for vision technicians is good. This is further supported by the fact that only 2.12% of the persons referred by the vision technician were considered normal by the ophthalmologist (false positives). Vision technicians referred only 5.57% persons screened at the Vision Centres indicating their confidence in their diagnosis. We could not collect information on false negatives in this study; this information will help to further examine the performance of the vision technicians.

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