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National Programme for Control of Blindness (NPCB) in the Eleventh (11th) Five-year Plan Period

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The Registrar General of India has estimated India's population at 1095.7 million (2005), with a projected increase to 1254.0 million in 2015. The proportion of children in the age group of 0 to 15 years and the elderly (60 years and above) is expected to constitute 33.5% & 7.2% of the total population respectively.¹ At the same time, the infant mortality rate per thousand live births has declined from 74 (1995) to 57 (2007),² which implies that a larger proportion of babies born premature and/or with low birth weight have been saved due to advances in the neonatal and child care services in the country. However, in the context of eye care programmes, these children are at a greater risk of developing refractive errors such as high myopia, myopic astigmatism, anisometropic amblyopia, strabismus, and retinopathy of prematurity (ROP).³

On the other end of the age spectrum, increased life expectancy led to a sharp increase in the number of elderly persons between 1991 and 2001. This is projected to rise to about 324 million by 2050.⁴ These people are prone to develop cataract and other age-related ocular morbidity problems. Emerging eye issues like diabetic retinopathy, glaucoma, low vision, and childhood blindness need focussed attention and multipronged solutions. In addition, all age groups and specific categories of the workforce are vulnerable to ocular trauma. Ocular morbidity hampers performance at school; reduces employability and productivity and, in general, impairs the quality of life, which has a direct bearing on the economic health of the nation as well in terms of Gross Domestic Product (GDP). There is a huge unmet need for eye care throughout the world; this is increasingly being recognized as a vital component of the total health care delivery system.

The National Programme for Control of Blindness (NPCB) was launched by the Government of India, Ministry of Health and Family Welfare, in the year 1976 as a 100% centrally sponsored scheme/programme with the goal of reducing the prevalence of blindness from 1.49% to 0.3% by the year 2000 – this was later revised to the year 2020 in conjunction with VISION 2020: The Right to Sight initiative. Great strides have been made in the country with the involvement of multiple stakeholders and partners in the government and non-governmental sector. A rapid survey on avoidable blindness under the NPCB during 2006-07 showed

a reduction in the prevalence to 1.0%; currently, the programme implementation is subsumed under the umbrella programme National Rural Health Mission (NRHM) so that it can be aligned with the administrative structure ensuring greater reach and effectiveness.

The Cabinet Committee on Economic Affairs (CCEA), the highest body constituted by the Parliament of India, has endorsed and approved a budget of INR 12,500 (twelve thousand and five hundred) million for the XI five-year (2007-12) plan period. The enhanced funding and financial allocation to the tune of nearly two-thirds of the previous plan period is indicative of the high political commitment accorded to blindness control activities in the country. With the federal nature of the Indian Constitution, the States are largely independent in matters relating to health delivery. The Central Government's responsibility consists mainly of policy making, planning, funding, guiding, assisting, evaluating and coordinating the work of State health ministries so that health services cover every part of the country and no State lags behind for want of these services. The NPCB is striving to enhance the capacity of health institutions, health personnel and the community at all levels to address issues under the programme. In the approved XI five-year plan period, schemes with existing/enhanced financial allocation are being implemented along with new initiatives to reduce blindness.

Capacity building of human resources

Health personnel play a key role in the implementation of any health programme including NPCB. High knowledge and awareness levels, a positive attitude and appropriate skills enable delivery of quality service, including proper content and coverage. Re-orientation training of government ophthalmic surgeons, medical officers, paramedical ophthalmic assistants, ophthalmic nursing, schoolteachers and other general health care staff, including community link workers is going on under the NPCB. Re-orientation training of eye surgeons in the public sector is coordinated by GOI in consultation with State authorities. Financial support for training eye surgeons will be extended upto a maximum of Rs 70,000 (seventy thousand) in an ophthalmology subspecialty through identified government and NGOs. The salary component of the regular staff is borne by State/UTs. However, one of the deficiencies

Salient features of XI five-year plan period

SI No.	Component	Pattern of assistance under NPCB
1.	Strengthening/Setting up of Regional Institutes of Ophthalmology (RIO)	Non-recurring assistance upto Rs. 60 (sixty) lakhs for new RIOs and Rs. 40 (forty) lakhs for existing RIOs to provide ophthalmic equipment for developing pediatric/low vision/retina units, IOL surgery and other subspecialties, teaching and training infrastructure, including audio-visual aids
2.	Strengthening of medical colleges	Non-recurring assistance upto Rs. 40 (forty) lakhs for ophthalmic equipment as commodity assistance as above
3.	Strengthening of district hospitals	Non-recurring assistance upto Rs. 20 (twenty) lakhs for ophthalmic equipment for IOL surgery, SICS, phacoemulsification and glaucoma management
4.	Upgradation of sub-district hospitals/CHCs	Non-recurring assistance upto Rs. 5 (five) lakh for ophthalmic equipment for IOL surgery, SICS, IOL, sutures, etc
5.	Mobile ophthalmic units with tele-ophthalmic networks	Non-recurring assistance upto Rs. 60 (sixty) lakh for development of mobile ophthalmic units with tele-ophthalmic network and few fixed models
6.	Vision Centres at the level of PHCs in government/voluntary sector	Non-recurring assistance upto Rs. 50,000 (fifty thousand) for basic equipment, furniture and fixtures, etc
7.	Support to eye banks in government/voluntary sector	Non-recurring assistance upto Rs. 15 (fifteen) lakh for equipment and furnishing towards strengthening/developing eye banks Recurring assistance upto Rs 1,500 (one thousand and five hundred) per pair of eyes towards honorarium for eye bank staff, consumables including preservation material and media, transportation/IPOL, training on eye banking, etc
8	Support to eye donation centres	Non-recurring assistance upto Rs. 1 (one) lakh for strengthening/developing eye donation centres Recurring assistance upto Rs. 1,000 (one thousand) per pair of eyes without duplication of financial assistance
9	Grant-In-Aid for free cataract operations	Recurring assistance of Rs. 750 (seven hundred and fifty) for performing free cataract operation including drugs, consumables, IOL, spectacles, publicity, transportation, etc
10	Grant-In-Aid for management of eye diseases other than cataract	Recurring assistance for NGOs for management of eye diseases (other than cataract) like diabetic retinopathy, glaucoma management, laser technique, corneal transplantation, vitreo-retinal surgery; treatment of childhood blindness is Rs. 1,000 (one thousand) per case
11	Grant-In-Aid for strengthening expansion of eye care units	Non-recurring assistance to NGOs upto Rs. 30 (thirty) lakh on a 1:1 sharing basis for strengthening/expansion of eye care units in rural/tribal areas
12	Construction of dedicated eye wards and eye OTs	Non-recurring assistance upto Rs. 75 (seventy-five) lakh for construction of dedicated eye wards and eye OTs in NE/developing States
13	Maintenance of ophthalmic equipments	Non-recurring assistance upto Rs. 5 (five) lakh per unit for maintenance of ophthalmic equipment supplied to public sector health facilities

noticed was inadequate availability of human resources in the health sector for providing eye care services in a satisfactory and competent manner. Therefore, in the XI plan, a provision of approximately 250 (two hundred & fifty) ophthalmic surgeons, 425 (four hundred & twenty-five) ophthalmic assistants and 150 (one hundred & fifty) eye donation counselors has been earmarked for States/UTs, keeping in mind the local needs. The recurring financial assistance of the above contractual staff will be borne by the GOI for the duration of the XI five-year plan period only.

Capacity building of community level structures

It would be right to conclude that simultaneous measures are being taken for enhancing the capacity of the community for eye care. Various activities and initiatives are being undertaken to improve community awareness on eye care. One of the areas being strengthened with greater vigor and strategic approach is eye donation and eye banking in the country. The VISION 2020: India team has been requested to sensitize people and involve spiritual/religious leaders in advocacy and communication regarding eye donation. In addition, the responsiveness of institutional and health personnel is also being addressed. Under NPCB, community link workers like anganwadi workers and Accredited Social Health

Activists (ASHA) are being provided an incentive of Rs 175 (one hundred and seventy-five) for advocacy and social mobilization. The plan is to involve social/developmental NGOs not currently associated with the programme but working with the community. These non-ophthalmic NGOs will be involved to broaden the base for advocacy, communication and social mobilization through a collaborative approach and partnership. NPCB, through its partners in the government and non-governmental sector, is hopeful of reducing blindness in the country, in line with the goals of the VISION 2020: Right to Sight initiative.

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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.¹ 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.² 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.³ 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.⁴ However, the utilization of eye care services still remains dismal in India.⁵

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.

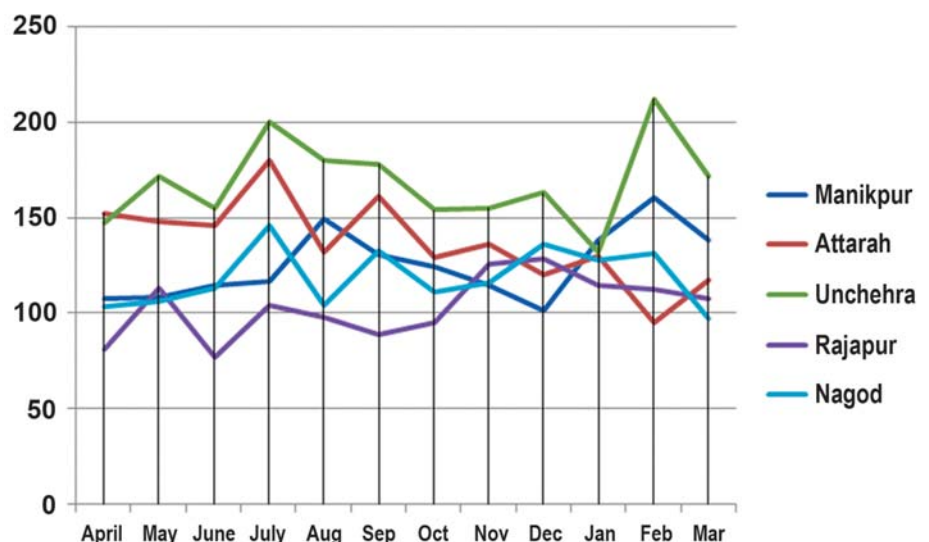
Results

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 ± 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 ± 451.83 (range 2313 to 3370) and mean new outpatients were 1566.40 ± 292.19 (range 1243 to 2020). The mean number of persons diagnosed with refractive errors was 1216 ± 129.86 (range 1076 to 1415).

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



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 ± 18.11 (range 3 days to 95 years); 291 (46.12%) of them were female.

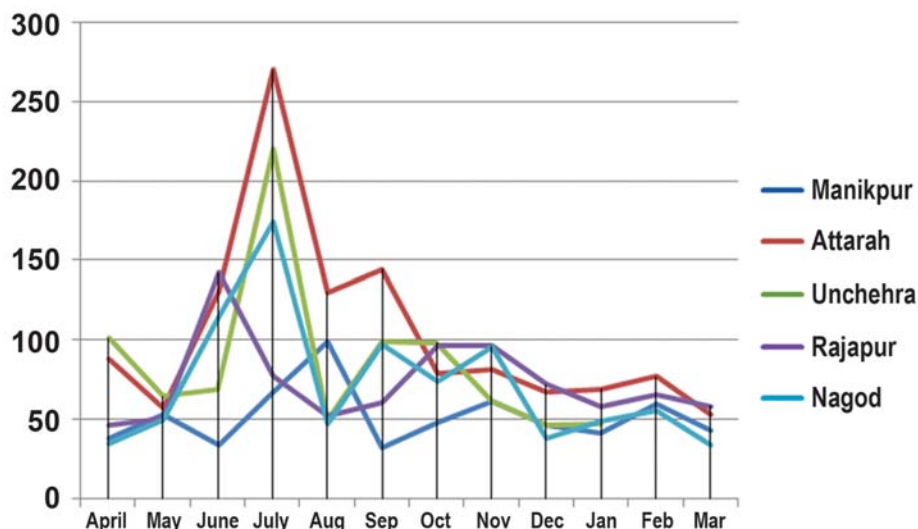
A total of 524 (83.04%) of these 631 referrals were for age related cataract; 283 (44.85%) of those referred utilized the services at the base hospital, including 226 persons (43.13% of the persons referred for cataract) who underwent cataract surgery. One hundred and thirty nine (49.12%) of those who 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.

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.

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



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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