PROJECT NETHRA
MOBILE OPHTHALMIC UNIT
FUNDED BY ROTARY CLUB

INTRODUCTION TO THE PROJECT

Health screening programs are cost-effective and provide value in preventive health efforts. Community-based screening is an effective strategy to identify health risk, improve access, provide motivation to change health habits, and improve physical status while returning significant value. Patients residing in interiors prefer to have a local, mobile service than a central hospital-based, service. The reason being it's a walk-in clinic and no appointment necessary; patient feels at ease in their surrounding rather than attending the practice. The other related issue is a process-oriented one of transport. All the participants can reach their screening session by walking or short distance travelling. This is more convenient than attending the hospital. Mobile clinics reach communities that don't have easy access to decent health care—uninsured, underinsured, or people residing far from health care center. It's primary and preventive care on wheels. It is difficult to quantify the benefits as they accrue to multiple stakeholders. However, the potential of mobile screening as an integrated player in the healthcare system and the value of investing in prevention are potentially enormous! The goal of broad-based community screening program includes evaluating whether screening services help to motivate people to help themselves. As consumers of Healthcare patients request much more in-depth information about the services they are receiving. Therefore numerous activities have to be developed to promote the screening service viz. various written and tape-recorded information sources; awareness talks at local camp sites and support groups and media coverage, etc.

BACKGROUND

Avoidable blindness is defined as blindness which could be either treated or prevented by known, cost-effective means. These are: Cataract, Glaucoma, Diabetic Retinopathy, Childhood blindness, age related macular degeneration, refractive error, Retinopathy of Prematurity, Vitamin deficiency, etc.

Diabetes mellitus is becoming a global epidemic and is now one of the top causes of vision loss globally. In 2014, there were approximately 422 million people (8.5% of the world's adult population) living with diabetes; compared to 108 million in 1980. Diabetic Retinopathy (DR) continues to be one of the leading causes of blindness despite highly effective treatments.

In a pilot study conducted by us in Chengamand Panchayat in Ernakulam District, South India, it was found that only 70% of patients with Diabetes Mellitus were aware that this disease could affect the eye. This was a very alarming finding as the population in the Panchayat showed literacy of nearly 90% and had access to good medical care within a range of 10 to 15kms. In the same pilot study a door-to-door survey of patients with diabetes Mellitus were done. We detected a total of 1062 Diabetic Patients in a population of around 25,000. We have also examined the eyes of about 500 patients with Diabetes and we found the incidence of Diabetic Retinopathy to 20%. Based on this pilot study we decided that this is an important outreach programme wherein we can increase the awareness of eye complications of Diabetes and thereby prevent some of the blinding complication of the disease. We subsequently undertook a similar study in Nedumbasserry Panchayat in Ernakulam District, South India, and we now plan to spread this pilot project to other neighbouring panchayats in Ernakulam district and if possible to the remote areas of Neighbouring districts.

Kerala is the diabetes capital of India with a prevalence of diabetes as high as 20% — double the national average of 8%. In a large multi-center study involving nearly 20,000 subjects, the prevalence of diabetes in Thiruvananthapuram was 17% compared to 15% in Hyderabad and New Delhi, 4% in Nagpur and 3% in Dibrugarh.

Diabetes Prevalence across India

Dibrugarh	3%	New Delhi	10%
Nagpur	4%	Bangalore	12%
Kashmir Valley	6%	Kolkata	12%
Coimbatore	8%	Hyderabad	17%
Guwahati	8%	Trivandrum	16%
Mumbai	9%	Ernakulam	20%

- Several studies from different parts of Kerala support the high prevalence of diabetes. One study from central Kerala reported a prevalence of diabetes at 20% and pre-diabetes at 11%. Another study from southern Kerala, showed a wide urban-rural gradient in age-standardized (30-64 years) prevalence of diabetes indicating an important role of lifestyle factors. The prevalence was 17% in urban, 10% in the midland, 7% in the highland, and 4% in the coastal regions.

- Other studies have shown a prevalence of 11-19% in men and 15-22% in women with rural Keralites having paradoxically higher rates of diabetes than urban dwellers. This is in sharp contrast to national data that shows the prevalence of diabetes to be double in urban areas than rural areas.

- The high literacy rate in this state does not seem to translate to health literacy. The high prevalence of diabetes is accompanied by poor detection. In one study, a surprising 11% (55% of all diabetes) were newly diagnosed.

- Only a fifth of the diabetics are treated and adequately controlled. The high prevalence, poor detection and control of diabetes in Kerala with the highest standards of healthcare and literacy level compared to other states of India makes this disease doubly dangerous necessitating intensive education directed at doctors and the public alike.

- The most serious complication of diabetes for eye is the development of diabetic retinopathy. Diabetes affects the tiny blood vessels of eye and if they become blocked or leak then the retina, and possibly the vision, will be affected. The extent of these changes determines what type of diabetic retinopathy one has. Forty per cent of people with type 1 diabetes and 20 percent with Type-2 diabetes will develop some sort of diabetic retinopathy.

PURPOSE

One of the major initiatives of the Institute since its inception has been identifying patients with Diabetic Mellitus and detection of Diabetic Retinopathy. Giridhar Eye Institute has promoted a charitable trust "SSM Eye Research Foundation" in October 2005 with the objective of "reaching the unreached" residing in the remote/interior villages. The trust has been focusing on community centric activities since then by conducting eye screening programs for the underprivileged. On an average 8-10 screening programs are conducted in a month in association with various NGO's in the nearby villages. Visits to interior villages are undertaken by the trust/institute in a hired vehicle with limited source for conducting a full-fledged set-up eye screening. Requirement of a Mobile ophthalmic examination Van equipped with basic infrastructure for conducting total eye care has been the need of hour for the Trust to continue to render our services to the community to prevent avoidable blindness.

Prototype of proposed Mobile Van with Ophthalmic equipment/instruments

The mobile vision center will be equipped with the following basic equipment:

Hand-held Non-mydriatic Fundus Camera

Slit Lamp with Applanation Tonometer & Chair Unit

Auto-Refractometer

Streak Retinoscope

Ophthalmic Trial Set

Mobile vision screening program is an ophthalmologist led screening program that takes eye care facilities to the rural population. Patients are not required to travel to the base hospital; the ophthalmologist can reach patients at remotest areas and effectively screen patients for various eye problems. Subsequently only if surgical intervention is required, patient requires to come to the base hospital.

Reliably detecting and monitoring retinal disorders is key to ensuring high-quality care and to maintaining the vision of patients. The hand-held non-mydriatric fundus camera lets you do precisely that. As a mobile fundus camera, it is the perfect imaging companion. The camera is flexible for mobile fundus imaging. It is packed into a small, rugged carrying case. The camera can be conveniently transported and easily fits into any practice setup. Thanks to the camera's non-mydriatic operation and precise autofocus function, dilation of the eyes is not required. Its battery power provides added flexibility. It can easy capture images and videos, take color and red-free images instantly with the 40° field of view. With its on-screen targeting aid and integrated autofocus function, using the device is easy and convenient. Nine internal fixation LEDs help align the patient correctly and also facilitate the capture of peripheral images.

The optional WiFi functionality enables instant transfer of images to a Personal Computer or mobile device and subsequent transfer to the base hospital through internet from the PC/Mobile Phone where a senior consultant can examine the fundus image of the patient and arrive at an instant treatment solution by communicating to the ophthalmologist at the camp site. Examinations are quickly performed and reviewed without needing to move the patient. Even medical staff can operate the device, enabling cost-effective image capture prior to the examination.

Major advantages of a non-mydriatic hand-held fundus camera includes (a) Retinal diagnosis that

reaches every patient, (b) for checkups and documentation of retinal conditions such as diabetic retinopathy, glaucoma and Age Related Macular Degeneration, (c) as a secondary device for immobile patients, and (d) Ideal for outreach programs, mobile eye care and satellite offices, etc.

AIM AND OBJECTIVE OF THE PROJECT

- To provide primary eye care services to public in rural and urban part of Kerala where there is no easy access to eye examination and also people who cannot travel and reach to the nearest hospital.
- The mobile eye care unit will conduct regular screening/eye check-up program for patients with diabetes so as to diagnose blinding eye complications due to diabetes i.e. diabetic retinopathy and refer such patients to the base hospital. Arrangements will be made to bring these patients to the base hospital for further treatment, if needed.
- To raise awareness about various lifestyle diseases affecting eye among public.
- To develop a strong unison system at grass root level by involving different stakeholders of the community.
- To evaluate the effectiveness by tracking the number of people who receive the treatment and much their vision improves.
- This project will therefore help in fulfilling the initiative by Govt. of India – "No More Avoidable Blindness" by the year 2020.

EXPECTED OUTCOME OF THE PROJECT

Our project will provide accessibility and affordability in eye care services to the people living in most inaccessible areas who are affected by low vision but have no access to basic eye care facilities. These people will be able to again join to work or school as their low vision has been corrected and thus become a productive member adding contribution to our developing India.

CONCLUSION

This, we feel is a novel project, which will vastly improve the awareness on eye diseases among the rural population and in long term reduce the burden of preventable and curable blindness.

We plan to focus remote areas of Ernakulam District in the first Phase and subsequently extending this service to the neighbouring districts viz. Kottayam, Alappuzha, Thrissur, Idukki, etc.

This project will go a long way in reducing the incidence of preventable blindness in our country.

We feel that this will be a noble and novel CSR initiative.

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