

Strengthening Retina Eye Care Services in Nepal: Retina Eye Care of Nepal project

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Research article

Keywords: retina eye care, Nepal, strengthening

Posted Date: August 17th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-32161/v2>

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Version of Record: A version of this preprint was published on October 27th, 2020. See the published version at <https://doi.org/10.1186/s12913-020-05850-x>.

Abstract

Background: Retinal diseases are very difficult to treat. So, early diagnoses and preventions are very important. But, few eye doctors can treat patients with retinal diseases in Nepal. Retina Eye Care of Nepal (RECON) project was designed to strengthen retina eye care in Nepal.

Methods: RECON was implemented from May 2016 to February 2019 in Nepal. Four Master Eye Doctors (MED) received Training of Trainers (TOT) from Tokushima University, Japan. MEDs developed training materials for different cadres of ophthalmic human resources, enhanced retina eye care facilities, and conducted retina-screening camp in Nepal.

Result: Twenty ophthalmologists, 16 optometrists, 48 ophthalmic assistants and 17 ophthalmic nurses, 76 physicians and 28 health workers were trained in retina care. Eight outreach retina camps were conducted.

Conclusion: The project was a novel approach to strengthen retina services in Nepal. The aim of the project was accomplished with the ultimate benefits to the needy retina patients who otherwise were going to miss the retina services.

Background:

Recently causes of blindness are changing in Nepal. The number of people blind due to retinal diseases is increasing. Age-related macular degeneration (AMD), diabetic retinopathy (DR), hypertensive retinopathy, and retinal vein occlusion are the major retinal problems in Nepal. As the prevalence of vitreoretinal disorders is increasing with age, it indicates that retinal disorders will be a major public health issue with longevity in future[1].

A rapid assessment of blindness conducted in 2010 had reported posterior segment problems as the second common cause of blindness, after cataract in Nepal[2]. Retinal diseases are very difficult to treat. Results from the limited-resource countries show a significant number of patients seek eye consultations only when they have severe vision loss in both eyes. Delay in presentation was noted as a significant issue. It is either due to inadequate eye care facility or due to improper and misdiagnosis. Thus, it was acknowledged that all ophthalmologists should be trained to identify, manage, or refer to retina problems appropriately. As DR is the cause of avoidable blindness, if detected early before symptomatic visual loss, the screening will be an excellent means for secondary prevention strategies[3]. So, early diagnoses and preventions are very important.

The projected population of Province 3 and 4 in Nepal is 60, 26,626, and 24, 72,494 respectively in the year 2016. There are altogether 6 tertiary retina care centers in Province 3 and 1 tertiary retina center in

province 4 of Nepal to cover that much of the population. But, few eye doctors can treat patients with retinal diseases in Nepal. It is also necessary to train ophthalmic assistants, optometrists, ophthalmic nurses, and other health workers who can assist the treatment of retinal diseases. So, strengthening retina eye care services is very important in Nepal.

Retina Eye Care of Nepal (RECON) project was a joint program of BP Eye Foundation, Kathmandu, Nepal, and Tokushima University, Japan to strengthen 3 retina centers in Province 1 and 1 retina center in province 4. The project duration was from May 2016 to February 2019. The purpose of RECON was to strengthen retina eye care services in Nepal by training ophthalmic human resources, enhancing retina eye care facilities, and conducting retina-screening camp.

Methods:

RECON established a unique approach to accomplish its objectives (Figure 1).

Master Eye Doctor (MED) Training

Four eye institutes, Hospital for Children, Eye, ENT & Rehabilitation Services (CHEERS) located at Bhaktapur district, Himalaya Eye Hospital (HEH) located at Kaski district, Nepal Eye Hospital (NEH) and BP Koirala Lions Club of Ophthalmic studies (BPKLCOS), located at Kathmandu district were selected as the **partner retina centers**. CHEERS and HEH had one retina specialist each and NEH and BPKLCOS had two retina specialists each at the time of project execution. Four Retina specialists, one from each partner retina center of Nepal received one-month Training of Trainers (TOT) in retina care from Tokushima University of Japan in the first year of the project and got a certificate of Master Eye Doctor (MED).MED also received advanced retina training for 2 weeks at Kindai University and the Tokushima University of Japan at the beginning of the 3rd year of the project.

Strengthening of Retina Centres

All partner retina centers already had vitrectomy machines and laser facilities. Vitreoretinal procedures were already in functional states at all retina centers except at CHEERS. Moreover, BPKCLOS and NEH located at the capital city already had residency programs. HEH is located outside of the capital city while CHEERS is a new hospital at Bhaktapur, within close premises of the capital city. The project supported fundus photography machines, ophthalmic ultrasonic imaging, wide-angle viewing system, and cryo machine to these partner eye institutes. MEDs started strengthening of retina clinics with knowledge and skills gained during TOT in retina care from Tokushima University.

Advocacy and Retina force networking

MEDs conducted first continuing medical education (CME) on retina eye care with facilitators and visiting retina experts from Tokushima University to the targeted ophthalmologists with a focus on retina force networking. Second CME was on developing vitrectomy in Nepal.

Training Human Resources

These MEDs prepared training materials on retina management for different cadre of ophthalmic human resources including general ophthalmologists, optometrists, ophthalmic assistants, ophthalmic nurses, and female community health volunteers. These MEDs already provided two weeks retina training for ophthalmologists, one-week training for optometrists, ophthalmic assistants, and ophthalmic nurses from different eye institutes of Nepal. The training included early detection and prompt referral of retinal diseases from the community to the retina training centers.

Retina Camps

Outreach retina camps were conducted outside of base hospitals to target the community who otherwise would not visit the base hospital due to various reasons. Portable fundus camera, binocular and monocular indirect ophthalmoscope with 20 dioptre convex lenses were used to screen the retinal diseases at eye camps. The patients with retinal diseases found at eye camps were sent to the respective retina centers for further treatment. Retina camps were conducted in partnership with local health clubs, municipalities, or nongovernment organizations. **Each camp** shared the task among different cadres of health care workers including MED, optometrist, ophthalmic nurse and ophthalmic assistant. MED performed funduscopy and advised for further treatment, optometrist performed fundus photography, ophthalmic nurses helped in counseling and ophthalmic assistant helped in taking vision, pupil dilation, and history taking.

Results:

Table 1 shows the number of vitreo retina procedures by all 4 retina centers before and during the project period. There were no vitreoretinal procedures performed at CHEERS before the RECON project. All retina centers are doing good performance every year after enrolling in the RECON project. These retinal procedures were invariably performed by the retina specialists of the respective retina centers. Table 2 depicts the number of human resources trained in retina care. Advocacy campaigns and retina camps were held as shown in table 3.

Discussion:

The vitreoretinal problem is likely to become more prevalent all over the world including the developing nations. Nowadays, treatment of retinal conditions has become cost-effective, and has improved with the advancement in technology and better equipment facility even in a developing country. However, the shortage of skilled personnel is still a challenge to run fully functioning dedicated retina care. It is of utmost importance that we need to produce ophthalmologists with subspecialty training in retinal disease who can train future generations of eye health cadres [4].

A significant barrier was the practice of setting up a screening system without adequate treatment facilities being in place [3]. In our case, all retina centers already had vitrectomy machines, laser facility, and optical coherence tomography. RECON executed skill enhancement, trained, and retrained MEDs of Nepal in capacity building. CME helped in advocacy campaign and retina forces networking. All the trainees, eye doctors, optometrists, ophthalmic assistants, ophthalmic nurses, and physicians were providing education to retina patients about the importance of retina check-up and referring them in need to our retina care centers.

The primary care physicians are often the first medical personnel for patients with diabetes. The knowledge of the attending physicians regarding diabetic retinopathy is very important as they are the main source of referrals for these patients to ophthalmologists. Various studies have shown the real scenario about the level of awareness of diabetic eye disease among physicians. Even in developed countries, many of the studies have shown that the knowledge and awareness of physicians about diabetic retinopathy is not adequate and have emphasized on the further dedicated training[5]–[7].

Most Eye camp is widely practiced in all over Nepal. To add the retinal disease screening at eye camps is very useful for the prevention of retinal diseases. Retina camps were the means of eye health education, eye examinations, fundus photography to patients in our project.

Bhaktapur retina study in Nepal highlighted the real-world scenario about retinal diseases in Nepal. Low awareness of major blinding retinal diseases in the Nepalese population and high prevalence of retinal diseases suggests for widespread awareness campaigns and retinal diseases screening. The study suggested to train allied ophthalmic personnel and allied medical personnel to build up a proper referral system to tertiary eye hospital [8].

In our retina camps, apart from direct beneficiaries who got free consultation in retina camps, there were many indirect beneficiaries in the community. Awareness of diabetic and hypertensive retinopathy and other retinal diseases were the main aims of retina camp. This is a good step of advocacy for early detection and prompt treatment to prevent retina related visual blindness in Nepal.

The extensive campaigns are necessary to promote increased awareness in a community. We should insist on active community participation and promote collaboration with community eye centers and eye hospitals. This strategy will help in the early detection of diseases and reduction in retinal-related visual impairment and blindness[9].

Conclusion:

RECON was a novel approach to strengthen retina services in Nepal. The aim of the project was the ultimate benefits to the needy retina patients who otherwise were going to miss the retina services. There was a strengthening of retina eye care of all these retina centers. The project focused on the training retina workforces, enhancing retina care by easy access and improved services and awareness to even grass root level in the community by conducting retina-screening camp. We recommend further similar type of strategy in different provinces of Nepal to combat retinal-related blindness in the future.

Abbreviations

AMD= Age related macular degeneration

BPKLCOS=BP Koirala Lions Club of Ophthalmic Studies

CHEERS= Hospital for Children, Eye, ENT & Rehabilitation Services

HEH= Himalayan Eye Hospital

NEH= Nepal Eye Hospital

CME=continuous medical education

DR = Diabetic retinopathy

IEC=information education and communication

MED= Master Eye Doctor

RECON= Retina Eye Care of Nepal

TOT=Training of Trainers

Declarations

Ethics approval and consent to participate:

We adhered to the tenet of the Helsinki declaration. The permission to publish project output was approved by the project implementing organization, BP Eye Foundation. Informed consent was waived off in this retrospective study, where the participants were de-identified or could not be contacted. (Reference No.: 522-076/077).

Consent to participate is “not applicable”.

Consent for publication

Consent of publication is “not applicable” to participants.

Competing interests

The authors declare that they have no competing interests.

Funding

Japanese International Cooperation Agency (JICA) and Tokushima University, Japan supported the RECON project both financially and technically for its execution.

Authors' contributions

AS collected data and drafted the manuscript. CS, PK, HMG and TN gave input for critical review of the manuscript. All authors read and approved the final manuscript.

Acknowledgements

We would like thank Prof. Madan Prasad Upadhyay, who guided us in various ways from the very beginning to the end of the project and even in writing the manuscript. We would also like to thank Mrs. Miki Upreti, program co-ordinator and Mrs. Pujan Khanal program officer of RECON project for their great supports in execution of the program.

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Tables

Table 1: Vitreo retinal procedures

	Before RECON		During RECON			
	Year 1	Year 2	Year 1	Year 2	Year 3	
Vitreo Retinal Surgeries	0	0	18	147	211	CHEERS
	51	102	160	167	260	BPKLCOS
	44	96	210	314	349	NEH
	14	27	38	45	48	HEH
	0	0	64	301	402	CHEERS
Intravitreal injections	0	93	374	370	583	BPKLCOS
	72	188	367	773	1544	NEH
	305	314	411	686	1088	HEH
	0	0	17	113	123	CHEERS
Retinal Lasers	65	79	178	290	336	BPKLCOS
	55	73	168	250	448	NEH
	25	35	78	99	105	HEH

BPKCLOS, BP Koirala Lions Club of Ophthalmic studies; CHEERS, Hospital for Children, Eye, ENT & Rehabilitation Services; HEH, Himalaya Eye Hospital; NEH, Nepal Eye Hospital; RECON, Retina Eye Care of Nepal

Table 2: Capacity building of human resources

Human resources	Frequency
Master Eye Doctors	4
Ophthalmologists	20
Optometrists	16
Ophthalmic Assistants	48
Ophthalmic Nurses	17
General Physicians	76
Health Workers	28

Table 3: Advocacy and Retina camps

No of CMEs	2
No of Retina Camps	8
No of Retina patients screened at the camp	627
No of IEC materials distributed	2000

No=Number; CME=continuous medical education; IEC=information, education & communication

Figures

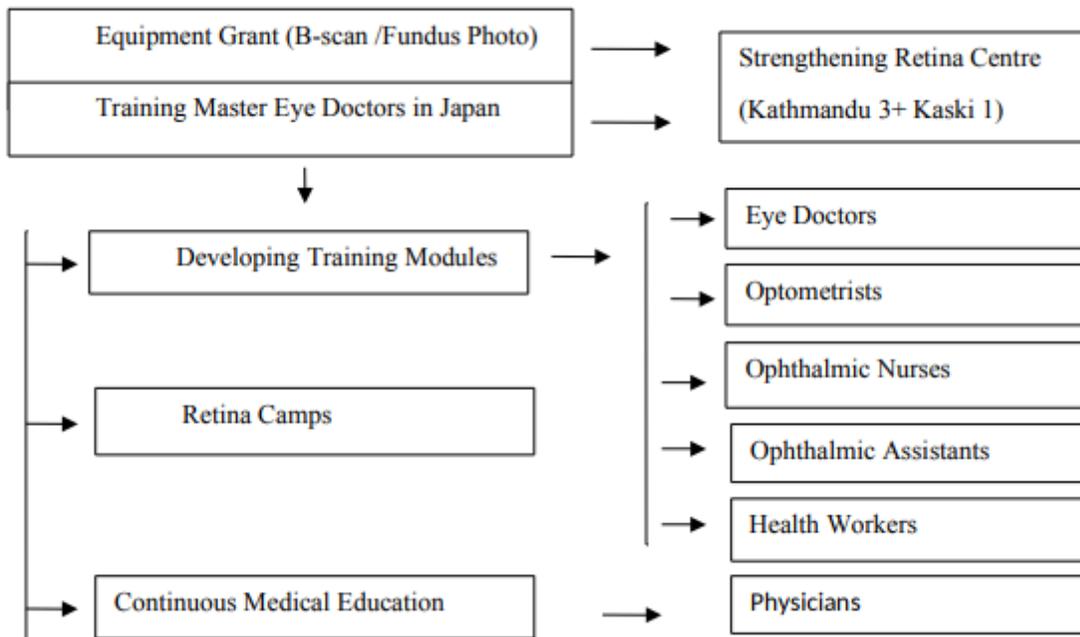


Figure 1

Algorithm of RECON activities RECON=Retina Eye Care of Nepal