Seeing is Believing Phase V
Preventing Avoidable Vision Loss Among Vulnerable Urban Populations in Indonesia
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Introduction and Overview:

The overall goal of the Seeing is Believing (SiB) program Phase V was to prevent avoidable vision loss among vulnerable urban populations in Indonesia.

The project objectives were:

1. To improve the vision of adolescent students, teachers and adults in Jakarta and its surrounding area by establishing school-based and community-based systems for identifying uncorrected refractive errors (URE), and providing free or low-cost corrective eyeglasses and referrals for further examination and treatment when required.
2. To prevent blindness by expanding the locations where screening and treatment for diabetic retinopathy are performed.
3. To increase community and health system awareness of the importance of URE among children and diabetic retinopathy among adults with diabetes in Jakarta and other urban centers in Indonesia.

Project outcomes:
Objective 1: To improve the vision of adolescent students, teachers, and adults in Jakarta and its surrounding area by establishing school-based and community-based systems for identifying uncorrected refractive errors (URE), and providing free or low-cost corrective eyeglasses and referrals for further examination and treatment when required.

i. School-based RE component (Logframe reference RE 1):

- **Compliance of students towards use of eyeglasses:**

- Following the distribution of eyeglasses to students, HKI monitored the extent to which they were used regularly. HKI administered a questionnaire to a sample of 100 students to assess the usage of their eyeglasses, the reasons for not wearing them, and also their parents' reaction to their using the eyeglasses. Unscheduled classroom visits were conducted in order to determine whether children were wearing the eyeglasses supplied by the program HKI staff also noted the condition of the eyeglasses and the students were once again counselled

about the care and adaptation to the eyeglasses. The survey results indicate that 44% of the students who received eyeglasses were found to be wearing them at the time of the survey (unfortunately there is limited global data to compare this against for children). The remaining children gave the following reasons for not wearing their glasses during the time of the visit (children could provide multiple responses):

- Forgot their glasses at home (29%);
- Only wear glasses when they read (33%);
- Lost them or broke them (12%); and
- Other causes (26%)- Did not like them, were not encouraged by parents, other children teased them.

More efforts require to be made to understand the relation of compliance and the power of the eyeglasses distributed. In this program a power of more than -0.75DS in one eye was given to students. A power of less than 0.50DS in the fellow would probably reduce the compliance due to the minimal impairment binocularly. These factors must also be taken into consideration while distributing eyeglasses.

HKI will continue to investigate ways to increase compliance with wearing eyeglasses by children.

Objective 2: To prevent blindness by expanding the locations where screening and treatment for diabetic retinopathy are performed (DR Logframe Reference 1).

Diabetic Retinopathy (DR) is a complication faced by many people with diabetes (PWD) and is one of the leading causes of preventable blindness among adults. The number of PWD in Indonesia was estimated at 8.4 million in the year 2000 and this number will almost triple to 21.3 million people by the end of 2030. No population-based survey for DR has been conducted among Indonesians to date, but globally the prevalence of DR among diabetics is estimated to be 34.6% which would mean that in 2010 approximately 2.9 million Indonesians with diabetes will have DR in Indonesia and 7.4 million Indonesians will have DR at the end of 2030 (Yau et al., 2012). Blindness from DR is almost completely preventable with appropriate and timely screening and treatment with laser photocoagulation.

In Indonesia, provision of DR services (screening and treatment) are largely limited to the tertiary hospitals or private facilities—which requires referrals from the PHC to the district hospitals (RSUDs), and then finally a referral to the tertiary hospital.

HKI has assisted the capacity building of DR services at the tertiary facility and to support the hospitals to consider new ways to increase screening of PWD at the PHC level.

Jakarta, Bandung, and Jogjakarta are three of Indonesia's largest cities and each has a significant potential burden of DR. Jakarta has potentially more than 150,000 PWD with DR, Jogjakarta has more than 50,000, and the province of West Java, of which Bandung is the capital, may have more than 700,000 PWD with DR.

Care for Diabetes in Indonesia

PWD access a majority of their care for diabetes at the PHC level through monthly visits to their neighborhood PHC or a nearby health post or non-communicable diseases clinic. During the monthly visits, the PWD are registered at the hospital, have their vital signs checked by a nurse, have a basic lab examination, and then consult with the general practitioner (GP) to assess status and identify complaints. Once Diabetes is diagnosed, treatment is initiated by the GP and regular follow up is advised every month. In the event of uncontrollable blood sugars or the presence of complications, the GP will refer the PWD to the RSUD. It is rare for a PHC to have an ophthalmologist on staff and the GPs will not refer the PWD to the RSUD for an ophthalmic examination on a routine (annual) basis for assessment of the PWDs' eyes. Insurance will only reimburse a PWD for DR screening at the RSUD with a referral slip provided by the PHC. Based on a survey conducted by HKI of PWD attending services at PHCs in Jakarta, less then 20% of the PWD had ever been seen by an ophthalmologist.

Upon arrival to the RSUD, the PWD will be registered, have another assessment of vital signs, and then consult with an endocrinologist. If an ocular condition is suspected, the endocrinologist will refer the PWD to an ophthalmologist. At the RSUD level, the opthalmologist may not have access to a retinal camera, and the retinal examination may be done by an indirect ophthalmoscope. If DR is suspected, the opthalmologist will refer the PWD to the tertiary hospital where they will go through the same process of registration and assessment of vital signs before seeing an opthalmologist for a definitive diagnosis. If treatment is required, the ophthalmologist at the tertiary level will identify a time for the laser treatment and provide the PWD with an appointment. Laser treatment equipment is only available in few RSUD hospitals, in such cases, the treatment is carried out in the RSUD itself.

PHC-based Screening for DR

Given that so few PWD have ever accessed ophthalmic services—for DR or other eye conditions (OEC)—HKI and RSCM partnered on a pilot project to assess the changes in screening, detection, referral patterns, and care and treatment-seeking behaviors by PWD with DR. RSCM and HKI developed a PHC based- DR screening program in the province of DKI Jakarta where diabetics would be screened in PHC near their home and referred to secondary and tertiary ophthalmic care if required.

HKI and RSCM intended to assess the impact of PHC-based screening on the following questions:

- What is the burden of DR at the PHCs;
- Does a definitive diagnosis of DR change the referral patterns of the GP for the PWD; and
- Does the definitive diagnosis of DR lead to greater uptake of DR services at the RSUD.

As RSCM and HKI have already developed a system for screening, assessment, and treatment for DR at RSCM, this pilot project built on previously implemented DR initiatives such as the use of trained non-medical staff as screeners and graders. The previously trained photographers and graders served as resource persons during the training for the new mobile grading staff. RSCM and HKI implemented the PHC-based DR screening in 34 of Jakarta's 44 sub-districts. HKI and RSCM conducted screening using the Kowa Non-Mydriatic fundus camera in 17 randomly selected sub-districts out of the 34 targeted sub-districts and these 17 districts were considered to be the 'intervention' sub-districts. The remaining 17 sub-districts were control sub-districts.

In the intervention sub-districts, the PWD were registered and demographic information including the identification number, address, and telephone numbers were collected. Following registration, the mobile graders checked visual acuity for the PWD. The mobile graders screened the retinas of people with diabetes using a fundus camera. Since the camera used is a non-mydriatic camera, pupillary dilation was not required. After the fundus photograph was taken, the mobile graders read the images to identify the DR status of the person with diabetes at the site. Based on the results, the next step of the referral process was determined. If DR or any other serious eye health condition was present (visual acuity less than 6/18, ungradable images, infection, or other abnormal features in the photograph) the patient was referred to the secondary health care facility

In the control sub-districts, only patient education to the PWD regarding DR was provided. The expectation was that the intervention sub-districts would be able to refer PWD to the RSUD for DR services based on a definitive diagnosis and only those PWD requiring referral would be referred. In the control sub-districts, all PWD were to be referred to the RSUD for further assessment as the definitive diagnosis could not be made at the PHC level.

Table 10: Patients screened in Intervention and Control sub-district PHCs:

PHC	Total number of patients screened
Control	1225
Intervention	2050

Based on the screening results, the 17 intervention PHCs saw a 67% increase of PWD screened as compared to the 17 control PHCs. Providing this additional fundus camera service over the two-week period appeared to motivate more PWD to come to the PHC.

Out of the 2,050 PWD screened in the intervention PHCs, 242 PWD (11.8%) were identified with DR. Another 976 PWD (44.7%) were identified with OECs—approximately 65% of the PWD with OEC had cataracts. This data indicated that 55.5% of the PWD screened at the intervention PHCs required referral to ophthalmic services. In the control PHCs, all 1,225 PWD screened should have been referred to the RSUD for ophthalmic services as a definitive diagnosis could not have been made at the PHC level.

In order to assess the outcomes of the screening at the PHC, RSCM and HKI conducted phone-based follow-up surveys to assess care-seeking behaviors and the PWDs' experiences with the health system. We were able to reach 534 of the PWD screened in the intervention PHCs and 455 PWD screened in the control PHCs.

Of the PWD reached, only 11% of PWD from both control and intervention PHCs knew to have their eyes screened on an annual basis. In addition, only 16% of the PWD from the control and intervention PHCs had ever been referred to an ophthalmologist for any eye condition. Of these PWD, only 3% had accessed ophthalmic care at RSCM, the tertiary hospital in Jakarta that provides screening and treatment services for DR. Based on these results, increasing the number of PWD referred to RSUDs for DR services is necessary as a majority of PWD surveyed were not accessing ophthalmic care. In addition, it is important to improve patient education to ensure that PWD know that their eyes need to be screened for DR on an annual basis.

Of the 455 PWD from the control PHCs, only 22% received a referral slip to the RSUD for additional ophthalmic care (all PWD should have been referred to the RSUD per the PHC-based protocol in place for this assessment). Of the 99 PWD that received a referral slip from the control PHC, 82% of the PWD said they attended the hospital. In the intervention PHCs, of the PWD identified with DR, 77% of the PWD received a referral slip. Of the 92 PWD with DR that received a referral slip in the intervention PHCs, 87% of the PWD said that they visited the hospital.

PWD in the intervention PHCs were significantly more likely to receive a referral slip than at that control PHCs. Although the GPs at the control PHCs were sensitized to refer all PWD for ophthalmic care to the RSUD, they were less likely to do so than in the intervention PHCs. In part, this may be due to perceived restrictions on the numbers of referrals that a PHC can make to the RSUD. In Indonesia, the PHC has a cap on the number of referrals that can be made for 155 clinical conditions. Referrals for DR are not included in the 155 conditions—the GPs can refer as many PWD for DR services at the RSUD as they would like—but it is possible that the GPs feel constrained with the number of referrals they can make.

Once the referral slip was provided, more than 80% of the PWD in both control and intervention PHCs said they visit the RSUD. Nearly all of the PWD interviewed were enrolled in the national health insurance system (BPJS). For reimbursement from BPJS, clients had to have the referral slips as they accessed higher levels of care or they would not be reimbursed for their care.

Table 10: Details of patients screened and referred from the Intervention and control sub-districts in Jakarta:

	Jakarta (Intervention)	Jakarta (Control)	Total
No. of screening events	17	17	34

No of people with diabetes screened	2050	1225	3275
No of image sets with DR	242	0 (no image sets collected)	
No of PWD seen with other eye conditions	916	477	
No. of image sets which are ungradable	18	Not applicable	
No of image sets with no DR	874	Not applicable	
No. of patients requiring referral	1176	1225	2401
No of people who were reached and interviewed (DR+OEC)	518 112 with DR 397 with OEC 9 ungradable pictures	451 (155 VA <6/18)	969
No of patients who received a referral letter (DR+OEC)	252 86 with DR 163 with OEC 3 ungradable pictures	97 58 with VA<6/18 39 with VA>6/18	349
No of patients seen by an ophthalmologist	214 77 with DR 135 with OEC 2 ungradable pictures	79 46 with VA<6/18 33 with VA>6/18	293

In summary, providing the fundus camera at the PHC level in Jakarta was able to identify a greater and previously undiagnosed number of PWD with DR. Given that most PWD in Jakarta who participated in this survey had not accessed ophthalmic care ever or did not know that annual eye screens are needed as part of their diabetic care, fundus photography at the PHC level may identify a significant burden of undiagnosed DR. In addition, GPs need to be sensitized about the importance of referrals of PWD to the RSUD. Most PWD in this survey reported attending the RSUD once the referral slip is given. It will be important to increase the understanding of the referral system, especially as it relates to diabetes care, in order to increase the number of people screened and treated for DR.

In Bandung and Yogyakarta, the process of sensitization with the PHCs was carried out along with the District health office. The DR screening team from the RSS hospital in Yogaykarta visited the PHCs one day a week which was very less and not all PWD could be screened from one PHC in a day. Therefore, the PHCs requested the team to revisit for another round after completion of the first.

In Bandung, CEH took over the budget for screening remotely and also deployed a van for this purpose. The grading process however was disjointed there due to the already prevailing workload for the ophthalmologists.

As in Jakarta, it was difficult to understand and track the referred patients on where they were seeking care. In Yogyakarta, there is another eye hospital which is private but under the national insurance system. The patients may be visiting this hospital as it is a Type C hospital but has all the treatment facilities available. This eliminates their travel to a district hospital and then to RS Sardjito for treatment.

The details of screening can be seen in the table below.

Table 11: Details of PHC-based screening for DR in Yogyakarta and Bandung:

	Yogyakarta	Bandung
Total number of people educated and provided with DR related information	**1,214**	**1,363**
Total number of patients screened	**1,214**	**1,363**
Number of people identified with DR	**338 (27.8%)**	**274(20.1%)**
Number of people with no DR	**652**	**680**
Number of people with other eye conditions	**205 (16.9%)**	**198(14.5%)**
Number of people with Ungradable images	**16**	**221***
Number of people referred to the district hospital	**562**	**683****

Number of people seen by the ophthalmologist	**3**	**18**
Number of people advised treatment	**3**	**18**

Appendix 1:

Original Logframe versus Accomplishments:

Headings	Statement(s)	Indicators	Accomplishments	Means of Verification	Assumptions / Risks
A. Goal:	To prevent avoidable vision loss among vulnerable urban populations in Indonesia by establishing school based and community based systems for identifying refractive errors and providing free or low-cost corrective eyeglasses.				• HKI retains key staff • Provincial Department of Health/Education supports RE programs in schools and communities • Stable partnerships among participating organizations.
B. Objectives:	1. To improve the vision of adolescent students, teachers and adults in Jakarta and its surrounding area by establishing school-based and community-based systems for identifying uncorrected refractive errors (URE), and providing free or low-cost corrective eyeglasses and referrals for further examination and treatment when required.	1.1 12,600 vision correcting spectacles provided to schools adolescents in junior high schools *(proxy for vision improvement)* 1.2 5,600 vision correcting spectacles provided to teachers in junior high schools *(proxy for vision improvement)* 1.3 1,500 vision correcting spectacles provided to, or purchased by adults through community-based distribution schemes *(proxy for vision improvement)*	18,158 eyeglasses provided to students (this output was changed to 17,403 for the LOP) 1,906 eyeglasses provided to teachers (This output was changed 1668 for the LOP) 360 adults purchased eyeglasses from three of the five PHCs.	1.1 Monthly program monitoring reports 1.2 Monthly program monitoring reports 1.3 Monthly program monitoring reports	• Cooperation from participating schools • Accurate program monitoring systems are set up • Commitment from optical shops, community health centers, and schools • Provincial Department of Health and Education supports program activities.

	Preparers note: The indicators in the column to the left are designed to reflect accomplishment of the program objectives. These indicators are at the outcome level. Proxies for vision improvement in the target population have been used.	1.4 80% of students /teachers/ adults with visual acuity ≥6/12 in worse eye after best corrected refraction	Achieved	1.4 Monthly program monitoring reports	
		1.5 80% of trained teachers conduct accurate VA screening	Achieved	1.5 Bi-annual quality control survey	
		1.6 80% of refractionists conduct accurate refraction in students and teachers	Achieved	1.6 Bi-annual quality control survey	
		1.7 70% trained nurses from primary health center conduct accurate VA screening	Achieved	1.7 Bi-annual quality control survey	
		1.8 50% of trained *kaders* conduct accurate VA screening	Kaders were advised to only conduct health promotion, therefore they were not trained on VA screening NA	1.8 Bi-annual quality control survey	
		1.9 Percent of trained vision entrepreneurs/ kaders who participate in the program		1.9 Monthly program monitoring reports	
		1.10 Total income received by *kaders* for direct sale of eye glasses	NA	1.10 Monthly program monitoring reports	
	2. To increase community and health system awareness of the importance of URE among children Jakarta, Indonesia.	2.1 600,000 people reached through print and on-line media	Over 2 million people reached	2.1 Media outlet circulation/readership estimates and specific webpage usage/hits reports	
		2.2 3 events promoting RE in Indonesia conducted with SCB Indonesia	Completed	2.2 Program monitoring reports	
		2.3 50% of students and 70% of teachers have, or are wearing eye glasses provided to them by program during	A sample of the students to whom eyeglasses were provided were monitored for compliance. 44% were found to be compliant.	2.3 Bi-annual compliance survey	

		unannounced monitoring visit			
		2.4 60% of audience (e.g. health center visitors counselled) know how to care for their spectacles/ have a positive attitude towards wearing glasses	NA	2.4 KAP (baseline and endline) on sample target audience	
		2.5 60% of people have a positive attitude towards RE services provided at community health centers	Yes	2.5 KAP (baseline and endline) on sample target audience	
		2.6 Established collaboration between INGOs and MoH to advocate for blindness prevention programs and policies	Yes	2.6 MOU or regular meeting minutes	
		2.7 Provincial Department of Health and Education (Jakarta) adopts teacher training curriculum on VA screening as part of school health program	Yes	2.7 Policy, decree or regulation, other form of commitment	
		2.8 Provincial Department of Health (Jakarta) supports (financially or through policy) community RE program	Supports, the policy has not been instated but budgetary support has been granted.	2.8 Policy, decree or regulation. Budget allocation	
C. Outputs:	1. To improve the vision of adolescent students, teachers and adults in Jakarta and its surrounding area by establishing school-based and community-based systems for identifying uncorrected refractive errors (URE), and providing free or low-cost corrective	1.1 140 junior high schools participate in the program	Completed	(Applies for all outputs) : Monthly program monitoring reports	• Full participation on the part of stakeholders. • Receptiveness to advocacy for increased allocation to school vision screenings. • Training participants' retention of information and skills. • Retention of VEs.
		1.2 700 teachers trained in VA screening	748 teachers trained	Periodic quality control surveys	
		1.3 12,600 eye glasses distributed to junior high school students	18,158 eyeglasses have been distributed to students		
		1.4 5,600 eye glasses distributed to junior high school teachers	1,906 eyeglasses were distributed to school teachers		

	eyeglasses and referrals for further examination and treatment when required.	1.5 70,000 students screened for VA 1.6 7,000 teachers screened for VA and presbyopia 1.7 100% Percent of screened students and teachers referred for further ophthalmology care (if needed) 1.8 100% Percent of children and adults referred for tertiary care (if needed) 1.9 Three primary eye care units set up in 3 primary health care centers in Jakarta 1.10 Three nurses from primary health care centers trained in community eye health 1.11 15,000 children and adults screened for VA by trained nurses in primary health care centers. 1.12 3,000 children refracted by trained refractionists in primary health care centers 1.13 30 counselling sessions on eye health and RE conducted by primary health care nurses Vision Entrepreneurs 1.14 39 *kaders* trained as vision entrepreneurs 1.15 30 counselling sessions on eye health and RE conducted by *kaders* 1.16 3 optical shops successfully partner with *kaders*.	90,124 students screened for VA 2,730 teachers screened for presbyopia Yes Yes Five PHCs set up one in each district in Jakarta province Five nurses trained in community eye health 14,554 adults and children screened at the PHCs 360 adults and children refracted and received eye glasses at the PHCs Completed NA NA		

	2. To increase community and health system awareness of the importance of URE among children Jakarta, Indonesia.	1.17 1,500 eye glasses sold by optical shops 1.18 100% of *kaders* receiving incentives for sale of eye glasses through optical shops 2.1 4 radio talk shows on eye health and RE conducted 2.2 4 articles on eye health and RE published in national level on-line and print media 2.3 48,830 IEC materials on eye health and RE distributed to target audience 2.4 Three World Sight Day events conducted	NA NA 1 radio talk show aired Completed 52,125 people sensitized and 37,571 reached directly with IEC materials. Completed		

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