Eye Health of Priests and Novices in Rural Area

Watanee Jenchitr MD*, Chalao Pongprayoon MD*,
Nisa Sothornwit MD* Pongpuck Choosri BSc, MS**,
Chawewan Yenjitr BE, MA***, Mongkhol Tapunya BSc****

** Department of Ophthalmology, Priest Hospital*
*** Department of Ophthalmology, Ratchburi Hospital*
**** International Health Policy Program*
***** Department of Academic affair, Priest Hospital*

***Background**: Early detection and treatment of eye diseases is important to minimize visual morbidity and permanent visual loss in general and priests' population.*
***Objective:** To evaluate eye health status, visual acuity and eye diseases of the priests and novices, to estimate the prevalence and causes of visual impairment, and to provide eye health education.*
***Material and method:** Between May 2006 and March 2007, the priests and novices in selected village (stratified population cluster random sampling) of 22 provinces in The First National Survey of Blindness and Visual Impairment Program in Thailand (TVIP) had their visual acuity (VA) and intraocular pressure (IOP) measured and eye examined by ophthalmic nurses. An ophthalmologist examined the anterior and posterior segment and took fundus pictures.*
***Results:** Two hundred sixty eight priests and novices were examined. Their age ranged between 12 and 88 years with a mean of 48.5 years. Most priests and novices had normal vision (20/20-20/40 - 67.54%). No priest and novices had bilateral blindness. Almost half (48.13%) had eyeglasses and 2.24% had bilateral low vision. Unilateral low vision and unilateral blindness were 3.73% and 3.36%. One eye blindness and one eye low vision was only 0.37%. Refractive error was the leading cause of visual impairment (22.39%), followed by cataract (17.54%), glaucoma (5.97%), vitreo-retinal diseases (1.49%), and glaucoma suspected (occludable angle and ocular hypertension) (3.35%).Fifty five priests (20.52%) were referred for further investigation and treatment.*
***Conclusion:** Because the mean age of the priests and novices in this survey was only 48.5 years, the prevalence of visual impairment was low. Most of the cases were avoidable or preventable. The implementation of an effective screening program and access to eye treatment with standard of care remains a priority for the priests in rural areas. For sustainable development, eye health education must be promoted.*

***Keyword:** Eye health, Eye disease screening, Prevalence of eye diseases, Sustainable eye care, Eye health education, Priest, Novices, Rural Thailand*

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Visual impairments are composed of low vision and blindness. World Health Organization (WHO) defined the criteria by both presenting and corrected VA. For low vision, VA in the better eye should see less than 6/18 (20/70) but equal or better than 3/60 (10/200). For blindness, the VA in the better eye is less than 3/60 (10/200)[1] and the visual field is less than 10 degree. Visual impairment and blindness remain major public health problems especially in rural Thailand as well as the other countries of the world[2]. This number is expected to rise due to an aging population and increase in life expectancy. Uncorrected refractive errors are the most common avoidable cause of visual impairment which easy to intervene and cost less resources.

Correspondence to: Jenchitr W. Department of Ophthalmology, Priest Hospital. Sri Ayuthya street, Bangkok 10400, Thailand. Phone&Fax:0-2354-4275, E-mail: j_watanee@hotmail.com

Cataract is the most common cause of treatable blindness worldwide[3]. The report from the National Survey of Blindness in Thailand in 1984, 1987 and 1994 revealed that cataract was the most common cause of blindness[4]. In Thailand, cataract campaign under the context of Primary Health Care were launched in 1978 and the first publication was in 1984[5,6]. Presently, cataract surgery in Thailand is exceeds new blinding cases each year. Intraocular lens (IOLs) implantation is compulsory for those using health card (universal coverage), social security personnel, and government officers[7]. Glaucoma is the third common[8,9] cause of blindness. It is a serious problem due to their permanent damage (irreversible nerve fiber defect) and need early detection. Chorioretinal diseases are emerging eye problems that affected the elderly. As epidemiological transition of diseases to non-communicable type, diabetic retinopathy, macular degeneration, and retinal vascular diseases are increasing. The priests and novices are considered as disadvantageous group due to their socioeconomic status. Specific rules and regulations, including transportation, are barriers to access to health care. Specific eye-health program for the priests toward cataract operation, early detection of glaucoma and diabetic retinopathy screening, and refractive services never been offered for the priests.

Objective

To conduct an eye health assessment by ophthalmic nurses and complete eye examination by ophthalmologists to estimate the prevalence and causes of blindness and visual impairment in members of the priest and novice in rural area of Thailand under the First National Survey of TVIP Program. Eye health education was provided to fulfill the objective of voluntary eye health worker in the temple.

Material and Method

Between May 2006 and March 2007, the working group of Eye Health Promotion Program of Ministry of Public Health joined with the ophthalmologists from university hospitals, both in Bangkok and in the North, Northeast, and South. They conducted the First National Survey of blindness and TVIP in 21 rural provinces and Bangkok. The sites of eye examination to conduct the survey were randomly stratified cluster sampling of the temples in the villages. All priests and novices in the temples of selected villages were checked by an ophthalmic nurse. They had their VA measurement by Snellen chart at 6 meters and pin hole application to determine the best correct

Table 1. Health status of priests and novices with eye examination in TVIP in 21 provinces

Disease*	Number	Percent
Healthy	138	51.49
Hypertension	31	11.57
Diabetes	27	10.07
Gastrointestinal diseases	24	8.95
Dyslipidemia	23	8.58
Allergy and urticaria	9	3.36
Chronic pulmonary diseases	8	2.98
Coronary heart disease	7	2.61
Arthritis and gout	4	1.49
Mental disorders	2	0.75
Anemia	2	0.75
Other**	6	2.23

* some priest had more than one disease
** Other were thyroid, prostatic hypertrophy, low back pain, neurologic disease, strabismus, subconjunctival hemorrhage

Table 2. Previous eye disease of priests and novic

Disease	Number	Percent
Pinguecular, Pterygium	9	3.36
Conjunctivitis and blepharitis	7	2.61
Cataract	7	2.61
Eye trauma	6	2.24
Blurred vision	6	2.24
Refractive error	4	1.49
Blind one eye	2	0.75
Retinal disease	1	0.37
Glaucoma	1	0.37
Strabismus	1	0.37
Total	44	16.42

Table 3. History of eye glasses using in priests and novices in TVIP in 21 provinces

Type of eye glasses*	Number	Percent
Sun glasses	8	2.99
Distant eye glasses	19	7.09
Reading eye glasses	97	36.19
Bifocal eye glasses	20	7.46
No eye glasses	139	51.87

* some priest had more than one eyeglasses

Table 4. Visual acuity (in the right eye) and visual perception of priests and novices in TVIP in 21 provinces

Visual acuity	Clear	Mild visual loss	Moderate visual loss	Severe visual loss	Can not judge	Total
20/20-20/40	22	58	23	5	73	181
20/50-20/70	0	9	15	5	11	40
20/100-20/200	1	9	9	4	7	30
15/200-5/200	0	2	1	5	1	9
Count finger	0	0	1	0	0	1
Hand motion	0	0	1	1	0	2
Light perception	0	0	0	1	0	1
No light perception	0	3	0	0	1	4
Total	23	81	50	21	93	268
Percent	8.58	30.22	18.66	7.84	34.70	100.00

Table 5. Eye disease of priests and novices in TVIP in 21 provinces

Eye disease*	Right eye	Left eye	Both eyes	Percent
No eye disease	146	144	134	50.00
Refractive error	60	60	66	24.63
Cataract	41	40	47	17.54
Glaucoma	13	12	16	5.97
Pseudophakia	11	7	13	4.85
Occludable angle	7	8	13	4.85
Phthisis/disfigured/no eye	3	1	4	1.49
Corneal diseases / scar	3	1	4	1.49
Significant pterygium	0	4	2	0.75
Age related macular degeneration	2	1	2	0.75
Ocular hypertension	1	1	2	0.75
Diabetic retinopathy	1	1	1	0.37
Retinal vascular disease	1	1	1	0.37
Epiretinal membrane	1	0	1	0.37

* one priest can have more than one disease

Table 6. Etiology of visual impairment of priests and novices in TVIP in 21 provinces

Causes	Right eye		Left eye	
	Number	Percent	Number	Percent
Congenital	2	0.7	3	1.1
Infection	1	0.4	-	-
Trauma	7	2.6	1	0.4
Degeneration	37	13.8	42	15.7
Total	268	100.0	268	100.0

Table 7. Number of priests refer for investigation and treatment in TVIP in 21 provinces

Causes of referral	Number	Percent
Cataract extraction	16	5.97
Glaucoma re-evaluation and gonioscopy	14	5.22
Visual field examination	14	5.22
Laser iridotomy	7	2.61
Medication given	3	1.12
Pterygium removal	1	0.37
Total	55	20.52

VA (BCVA), and pneumotonometry to measure the IOP. If IOP was abnormal, Goldmann applanation tonometry would be repeated. Questionnaire about past medical history, previous eye disease, eyeglasses usage and eye treatment of eye drop, laser or surgery were completed. Clinical examination of the anterior and posterior segment including gonioscopy and pupillary dilatation was done by the ophthalmologist. If the priest did not have cataract or dense corneal scar, fundus pictures were taken to get a second opinion from the glaucoma and retinal specialists. Causes of visual loss were determined for each eye presenting with BCVA less than 6/18 or 20/70.

Results

Two hundred sixty eight subjects were included in this study. The age range was 12 to 88

Table 8. Causes of visual impairment of the priests in TVIP in 21 provinces

Cause	LV one eye	LV both eyes	Blindness one eye	Blindness 1 eye LV 1 eye
Refractive error	4	3	1	-
Cataract	7	7	6	2
Glaucoma	-	1	1	-
BRVO	-	-	1	-
ARMD	-	1	-	-
DR	-	-	1	-
Cornel scar	1	-	1	-
Total	12	12	11	2
Percent	4.48	4.48	4.10	0.75

LV = Low vision, BRVO=Branch retinal vein occlusion, ARMD = Age related macular degeneration, DR = Diabetic retinopathy

Table 9. Prevalence of cataract in different age groups of priests

Age range (years)	Population	Cataract	Prevalence : 100
Less than 50	146	4	2.73
51 – 60	58	11	18.97
61 – 70	35	14	40.00
71 – 80	26	17	65.38
More than 80	3	1	33.33
Total	268	47	17.54

Table 10. Prevalence of glaucoma in different age groups of priests

Age range (years)	Population	Glaucoma	Prevalence : 100
40 and less	73	1	1.34
41-50	73	4	5.48
51-60	58	7	12.07
61-70	35	3	8.57
71-80	26	1	3.85
More than 80	3	0	0.00
Total	268	16	5.97

Table 11. Prevalence of chorioretinal diseases in different age groups

Age range (years)	Population	DR + AMD +BRVO And ERM	Prevalence : 100
60 and less	204	1	0.49
61 – 70	35	2	5.71
71 – 80	26	1	3.85
More than 80	3	1	33.33
Total	268	5	1.87

DR = Diabetic retinopathy, ARMD = Age related macular degeneration, BRVO = Branch retinal vein occlusion, ERM = Epiretinal membrane

Table 12. Prevalence of refractive errors in different age groups

Age range (years)	Population	Refractive errors	Prevalence : 100
11-20	23	5	21.74
21-30	20	6	30.00
31-40	30	7	23.33
41-50	73	14	19.18
51-60	58	19	32.76
61-70	35	12	34.29
71-80	26	2	7.69
More than 80	3	1	33.33
Total	268	66	24.63

years (Fig. 1) with the mean of 48.5 years. The highest frequency of 41 to 50 years old (27.24%), followed by the age range of 51 to 60 years old (21.64%). Almost half (41.79%) graduated at primary school level, 18.28% from secondary school and 16.42% from high school (Fig. 2). Half (51.49%) had no previous medical diseases. The most common previous diseases were hypertension (11.57%), diabetes (10.07%), gastrointestinal diseases (8.95%), and dyslipidemia (8.58%) (Table 1). For previous history of eye disease, pinguecula and pterygium were the most common (3.36%), followed by cataract, which equal to conjunctivitis and blepharitis (2.61%) (Table 2). History of blurred vision was equal to history of eye trauma (2.24%). Only 10% of the priests and novices used eye-drop. Half (51.87%) of the priests and novices had no eyeglasses (Table 3). Most of the priests and novices had VA 20/40 or better, which is considered as

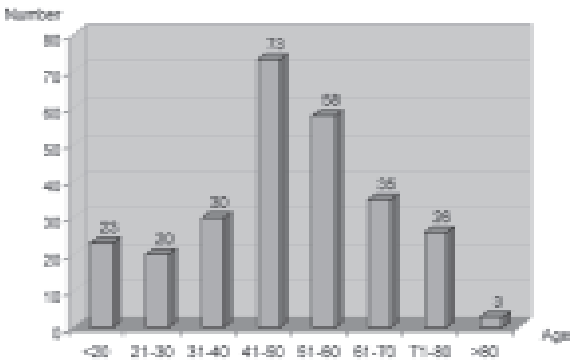

Fig. 1 Age range of priests and novices with eye examination in TVIP in 21 provinces

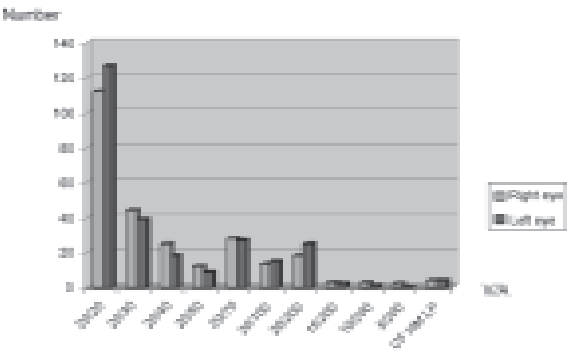

Fig. 3 Visual acuity of both eyes of priests and novices in TVIP in 21 provinces

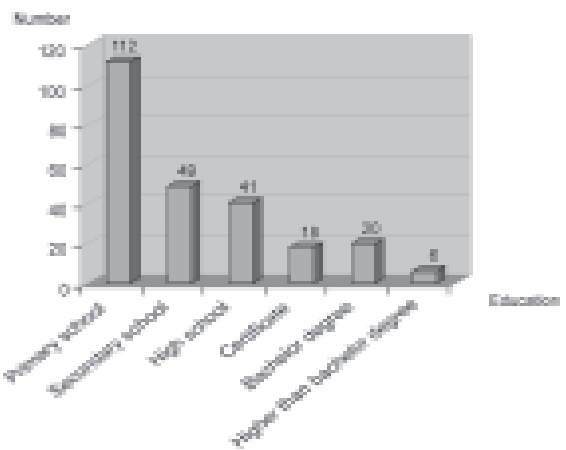

Fig. 2 Education of priests and novices with eye examination in TVIP in 21 provinces

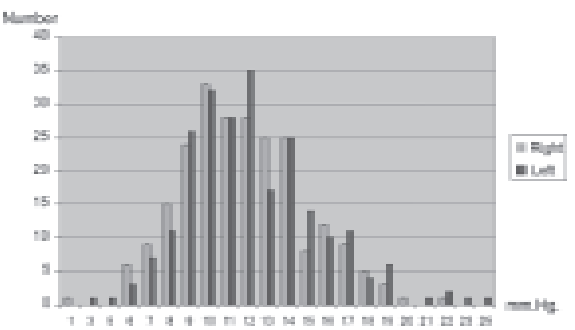

Fig. 4 Intraocular pressure of the priests without glaucoma

normal vision (67.54%) (Fig. 3). The mean IOP of population without glaucoma in the right eye was 11.75 mmHg with standard deviation (SD) of ± 3.13mmHg. The mean IOP in the left eye was 12.17 mmHg with SD of ± 3.34 mmHg. (Fig. 4). For glaucomatous patients, the mean IOP in the right eye was 11.50 mmHg with SD of ± 4.29mmHg. The mean IOP of glaucoma patients in the left eye was 12.71 mmHg with SD ± 3.49 mmHg. The questionnaire asked about how they graded their VA related to their visual satisfaction and 8.58% were satisfied with their clear vision, 30.22% complained of mild blurred vision, 18.66% complained of moderate blurred vision, and only 7.84% of the priests complained of severe blurred vision (Table 4). There were 34.70% of the priests and novices that could not judge their visual perception. Result of the eye examination revealed normal eye 50.00%. From Table 5, refractive error was the leading cause of visual impairment (22.39%), followed by cataract (17.54%), glaucoma (5.97%), vitreoretinal diseases (age-related macular degeneration, diabetic retinopathy, branch retinal vein occlusion (1.49%), and corneal scar (1.12%). The etiology of visual impairment (VI) was mostly from degeneration (Table 6). Eye diseases was suspected in 20.52% of the priests and they were referred to the hospital for further investigation and treatment (Table 7). Most of the referral cases were cataract, glaucoma, and glaucoma suspected. For severity of VI, unilateral low vision (3.73%) was almost equal to unilateral blindness (3.36%). There were no priests or novice with bilateral blindness. Low vision in both eyes was 2.24% (Table 8). Cataract was the most common cause of VI. Prevalence of cataract, glaucoma and chorioretinal diseases were increased with age (Table 9, 10, 11). For refractive error, there was no trend for aging contribution.

Discussion

It is accepted that blindness was associated with increasing age. In this survey only 64 priests (23.88%) in the age range of 61 to 80 years came for eye examination, so less eye disease of the elderly were found. Uncorrected refractive error caused 9.09% of blindness and 29.17% of low vision. Services for refractive errors need to be further expanded and integrated into eye care services of the priests, particularly those serving rural population. The result corresponds to the previous national survey of blindness conducted in 1994[4] as the most frequent cause of low vision and blindness are refractive error and cataract. Glaucomatous optic neuropathy was the third common cause of blindness but in this survey, glaucoma prevalence (5.97%) seems to be higher than the previous survey. It was interesting that glaucomatous cases did not have high IOP only 19.7-20.08 mmHg (mean ± 2 SD). So the accepted IOP (20 mmHg) for screening of glaucoma that was used in Thailand for a long time should be revised since most of the glaucomatous cases were normotensive. Now the trend for posterior segment diseases is increasing but in this survey revealed that chorioretinal diseases prevalence was only 1.49% but more in the elderly. In contrast to the studies in Western countries, AMD and diabetic retinopathy appear to play a major role as a cause of visual impairment in elderly[10,11]. The number of blind persons in the US is projected to increase by 70% and expected blind will be 1.6 million by 2020, with a similar rise projected for low vision. White American were most often impaired or blind from age-related macular degeneration (1.2% vs. 0.5%; p = .09). African Americans had higher rates of VI and blindness from cataract or posterior capsular opacification (2.7% vs. 1.1%; p = .006), glaucoma (0.9% vs. 0.1%; p = .006), and diabetic retinopathy (1.2% vs. 0.2%; p = . 004). Blindness or low vision affects approximately 1 in 28 Americans older than 40 years. The specific causes of visual impairment, and especially blindness, vary greatly by race/ethnicity. The prevalence of visual disabilities will increase markedly during the next 20 years, owing largely to the aging of the US population[11]. Cataract is the leading cause of blindness worldwide[12-18]. Smoking, diabetes, and exposure to ultraviolet light (UVB) consistently have been identified as risk factors for cataract development. Recently, new factors have been identified[19]. Further research into other previously identified risk factors has suggested that these initial associations may indeed not exist. Visual impairment is a prevalent condition among adults 40 years of age or older. The distribution of causes suggests that improvements in the visual health of the population could be achieved with more effective delivery of efficient ophthalmologic care. The Committee of Prevention of Blindness and Eye Health Promotion in Ministry of Public Health of Thailand target their eye intervention to the specific age group as pre-school and school age, working age and elderly. Due to lacking of eye health information and no specific intervention for the priests and novices, so enhancement to use their right to access to health care is essential. More than half of the priests refused eye examination and check up even the eye care team were capable for service in the temple at that time. These findings also point toward the urgent need for health education[20] even in developed country. Motivation that encourage eye care providers serving underserved communities to promote eye examination, particularly among diabetic, hypertensive priests at risk for eye diseases and complication.

Conclusion

The study emphasizes the need for regular check up of geriatric population especially the disadvantaged group as the priests to enable early detection of ocular problems and thus prevent avoidable disability and dependency. The implementation of an effective eye-care program remains a priority in the rural area. Targeted interventions for specific population group to increase appropriate eye care would greatly improve vision and function in older priests. More than half of those with visual impairment or blindness were either surgically treatable or potentially preventable. Social support and health insurance could also improve outcome and uptake of treatment options. Strategies that make good-quality cataract services and refractive error services available, affordable, and accessible, especially in rural areas, will have the greatest impact on visual impairment of priests.

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สภาวะสุขภาพตาของพระสงฆ์และสามเณรในภูมิภาค

วัฒนีย์ เย็นจิตร, เฉลา พงศ์ประยูร, นิศา โสธรวิทย์, ผ่องพักตร์ ชูศรี, ฉวีวรรณ เย็นจิตร, มงคล ทะปัญญา

ภูมิหลัง: *สภาวะสุขภาพทางตาของพระภิกษุและสามเณร ถ้าได้รับการดูแลให้ความสนใจตั้งแต่เริ่มมีอาการ จะลดปัญหาโรคตาที่รุนแรงลงได้มาก รวมทั้งป้องกันการสูญเสียตาอย่างถาวรได้*

วัตถุประสงค์: *ต้องการทราบสภาวะสุขภาพตาของพระสงฆ์และสามเณรในภูมิภาค พร้อมทั้งให้คำแนะนำรักษา รวมทั้งให้ความรู้โรคตาเพื่อไปถ่ายทอดแก่พระภิกษุอื่นๆ และญาติโยม*

วัสดุและวิธีการ: *คณะทำงานส่งเสริมสุขภาพตาร่วมกับจักษุแพทย์ของโรงพยาบาลในสังกัดกระทรวงสาธารณสุขและโรงพยาบาลมหาวิทยาลัย รวมทั้งพยาบาลเวชปฏิบัติทางตาได้ออกไปร่วมสำรวจสภาวะสุขภาพตาของพระสงฆ์และสามเณรในภูมิภาคที่วัดในโครงการ สำรวจสภาวะตาบอด สายตาเลือนราง โรคตาที่เป็นปัญหาสาธารณสุขโดยการวัดสายตา วัดความดันตา ตรวจความผิดปกติของตา และถ่ายภาพจอประสาทตา เมื่อพบว่ามีความผิดปกติทางตาจะนัดมาตรวจอย่างละเอียดที่โรงพยาบาลจังหวัด ให้การรักษาผ่าตัดตามโรคที่ตรวจพบ ให้แว่นตาเพื่ออ่านหนังสือ รวมทั้งให้คำแนะนำในการส่งเสริมสุขภาพตา*

ผลการดำเนินการ: *มีพระสงฆ์และสามเณรมารับการตรวจวัดสายตา 268 รูป อายุตั้งแต่ 12-88 ปี เฉลี่ย 48.5 ปี พบว่าพระสงฆ์และสามเณรมีระดับสายตาดีเป็นปกติ(20/20-20/40) คิดเป็น 67.54% มีโรคตาที่พบมากที่สุด คือ สายตาผิดปกติ จำนวน 66 รูป คิดเป็น 24.63% รองลงมา คือ ต้อกระจก 47 รูป คิดเป็น 17.54% ต้อหิน 16 รูป คิดเป็น 5.97% โรคจอประสาทตาและน้ำวุ้น 4 รูป คิดเป็น 1.49% มีพระสงฆ์มีความเสี่ยงที่จะเป็นต้อหิน 15 รูป คิดเป็น 5.59%*

สรุป: *สภาวะสุขภาพตาของพระสงฆ์และสามเณรอยู่ในเกณฑ์ดี ประมาณครึ่งหนึ่งมีสายตาปกติ ความผิดปกติของสายตาที่พบจำนวนมากทำให้ทราบว่า ถ้าจะให้บริการทางตาแก่พระสงฆ์และสามเณรให้ได้ผลดีต้องมีการวัดแว่นและแจกแว่นตาราคาประหยัดแก่พระสงฆ์และสามเณรที่ขาดแคลนปัจจัย เพื่อให้ศึกษาพระธรรมวินัย และถ่ายทอดแก่พุทธศาสนิกชน นอกจากนี้พระสงฆ์ที่มีความดันโลหิตสูง เบาหวาน และโรคหัวใจ ควรมารับการตรวจตาอย่างสม่ำเสมอ เพราะมักมีโรคทางตาโดยเฉพาะ ต้อหิน และโรคจอประสาทตาร่วมด้วย อย่างไรก็ตามรายงานนี้เป็นเพียงรายงาน เบื้องต้น ยังมีพระสงฆ์และสามเณรอีกเป็นจำนวนมาก ส่วนใหญ่เป็นผู้สูงอายุในภูมิภาคที่ต้องมารับการตรวจอย่างละเอียด เนื่องจากพบว่ามีความผิดปกติในช่วงคัดกรองโรคตา*