Survey of Refractive Errors among Buddhist Scripture, Dhamma-Bali and Regular School of Buddhist Novices in the Bangkok Metropolitan Area

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Background: *Refractive errors that affect learning are common eye problems in children. Eye-screening for refractive errors in the children population is accepted as a cost-effective method in the prevention of such problems. The Department of Ophthalmology, Priest Hospital, conducted a visual screening program for the novices of the Buddhist Scripture Schools.*

Objective: *To conduct the visual screening, evaluate eye health status and ocular abnormalities; to correct refractive errors among school novices of the Buddhist Scripture Schools.*

Material and Method: *A survey of refractive errors was conducted in 76 Buddhist Scripture schools in the Bangkok Metropolitan area between October 2005 and September 2007. The novices whose ages were between 9 and 20 years were included in the present study. Refraction and eye examinations were performed by ophthalmic nurses, optometrists, and the health personnel team, resulting in novices with refractive errors receiving custom-made eyeglasses, without charge along with eye health education. The present survey was conducted during public holidays.*

Results: *Two thousand six hundred fifty eight novices of the Buddhist Scripture were initially screened, leading to refractive errors being identified and corrected in 498 (18.74 %) of the cases. Of the corrected cases, 465 (93.37 %) needed eyeglasses, with the most common cause of refractive error being myopia. Three hundred and thirteen (62.85 %) eye diseases were found in 158 (5.94 %) of the novices, with pterygium and pinguecula being the most common diseases found in 51 (32.27 %), and amblyopia (lazy eye) in seven (4.43 %), while 75.32% of the novices had good visual acuity with no eye disease. The authors suggested that the percentage of novices with amblyopia could be reduced to less than 4.43% if it were to be detected earlier.*

Conclusion: *From the present study, 498(18.74 %) of the novices had refractive errors, and the 465 (93.37 %) of them needed and received eyeglasses. Furthermore, after having received the glasses, they reported that they were satisfied with a much better vision and ability to study in classes. Due to being in a low-age group, they had no serious eye diseases.*

Keyword: *Refraction, Refractive errors, Visual acuity, Novices, Buddhist Scripture School*

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Refractive errors are a common problem in children. If they are detected too late, they can cause serious effects such as amblyopia (lazy eye) and learning disorders. Eye health education is given to the novices to fulfill the criteria of the voluntary eye health workers in Buddhism.

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People with eye problems have a tendency to lose self-confidence and develop a poor learning capacity, which may affect their career path. Those with decreased vision tend to be more at risk of being involved in an accident than normal people[1]. Clear and sharp vision is one of the major factors for child development. Research has shown that 80% to 85% of the child's learning process requires sight. Children with abnormal vision due to strabismus and amblyopia

are slow in the learning process[2-9]. The World Health Organization has launched a campaign for treating refractive errors by the year 2020, and has placed the urgency of this project at level 5. This is due to refractive errors being more prevalent among the world's population. It was reported that 4.5% to 18.5% of the world's population has a visual acuity of 20/40 and lower, with refractive errors being the cause in more than half of these people. This visual acuity problem can be easily improved by wearing eyeglasses[6-8]. Eye screening for refractive errors is accepted as a cost-effective method in the prevention of visual impairment.

Most novices in Thailand are part of an underprivileged group from rural areas and would like to continue their education free of charge. The educational system for the novices in Thailand comprises of two systems. The curriculum in the first system, the Buddhist Scripture School, is the same as primary and secondary level, apart from the addition of Dhamma and Bali and the direct focus on the two. With good eye health and good visual acuity, the novices can continue their education, which depends on their capability. The Department of Ophthalmology, Priest Hospital, conducted a visual screening program for the novices in Buddhist Scripture, Dhamma-Bali School and Regular School as part of the Commemoration of the King's 60 Years Accession to the Throne.

Objective

The present study was done to evaluate the visual acuity, eye health status, refractive errors and visual behavior of the novices of Buddhist Scripture, Dhamma-Bali School and Regular School and to provide eyeglasses without charge to novices with refractive errors and to re-examine the high risk group in the hospital. Furthermore, the present study is to provide eye health education to the novices.

Material and Method

During weekends and public holiday, between October 2005 and September 2007, the ophthalmic nurses, the optometrists from Priest Hospital, and some rural hospitals under the Ministry of Public Health as well as private sectors went to 76 Buddhist Scripture, Dhamma-Bali Schools and Regular Schools for the novices in the Bangkok Metropolitan area to carry out visual screening. Refraction and eye examinations were conducted. Cases with suspected eye diseases or the presence of risk factors were referred to Priest Hospital for a complete eye examination. The novices with refractive errors received custom-made eye glasses

Table 1. Results of survey in novices

	Number	Percent
Normal visual acuity	2002	75.31
Abnormal visual acuity	498	18.74
Eye disease	158	5.94

Table 2. Refractive errors and prescriptions for novices

	Number	Percent
Abnormal visual acuity	498	18.74
Prescription for eyeglasses	465	93.37
Never had eyeglasses	365	78.49
Own wrong prescription for eyeglasses	100	21.51
No eyeglasses prescribed	33	6.63
Correct prescription for eyeglasses	21	4.51
Minimal refractive errors	12	2.58

Table 3. Types of refractive errors in 498 novices in 76 Scripture and Dharma - Bali schools in Bangkok

Types of refractive errors	Number	Percent
Myopia	313	62.85
Myopic astigmatism	149	29.91
Astigmatism	25	5.02
Anisometropia	10	2.00
Hyperopia	1	0.20

Table 4. Eye diseases of novices in 76 schools in Bangkok

Eye diseases	Number	Percent
Pterygium and Pinguecular	51	32.28
Eye strain	30	18.99
Eye irritation	13	8.23
Conjunctivitis	10	6.33
Allergic conjunctivitis	10	6.33
Hordeolum	8	5.06
Conjunctivitis	8	5.06
Amblyopia	7	4.43
Ptosis	6	3.80
Other diseases	6	3.80
Esotropia	3	1.90
Blepharitis	2	1.27
Exotropia	2	1.27
Trichiasis	2	1.27

without charge. All of them answered the questionnaire of eye health behavior and received eye health education. After 2 months, the novices who received eyeglasses answered the questionnaire about satisfaction and their quality of life after using glasses.

Results

Two thousand six hundred and fifty eight novices had eye examinations with refraction by the ophthalmic nurses and optometrists. The age range was 9-20 years. Refractive errors were identified and corrected in 498 (18.74%) of the cases. Of these, 465 cases (93.37%) needed eyeglasses. The most common causes of refractive errors were myopia (313) (62.85%) followed by myopic astigmatism (149) (29.91%), astigmatism (25) (5.02%), anisometropia (10) (2.00%), and hyperopia (1) (0.20%). Eye diseases were found in 158 (5.94 %) of all novices. Pterygium and pinguecula were the most common diseases found in 51 (32.27%) eyes, followed by eye strain in 30 (18.98%) , eye irritation in 13 (8.22%) , conjunctivitis in 10 (6.32%), allergic conjunctivitis in 10 (6.32%), external hordeolum in eight (5.06%), lithiasis in eight (5.06%), amblyopia in seven (4.43%), ptosis in six (3.79%), trichiasis in six (3.79%), esotropia in three (1.89%), blepharitis in two (1.26%), exotropia in two (1.26%), and amblyopia or lazy eye in seven (4.43%). Of all the novices, 75.3% had good visual acuity with no eye diseases.

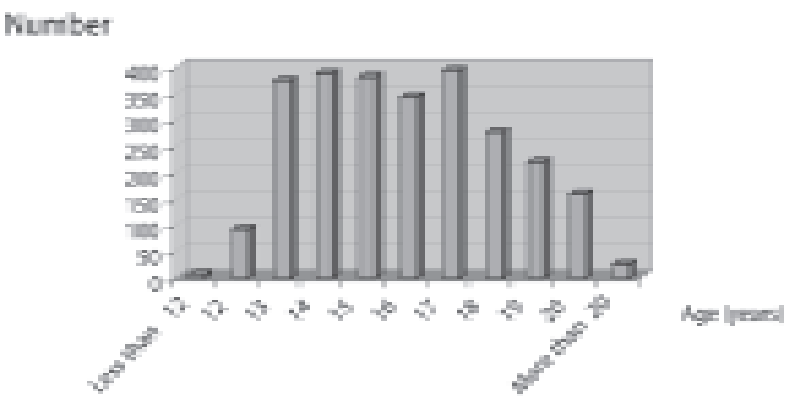

Fig. 1 Age of novices in refractive errors screening program

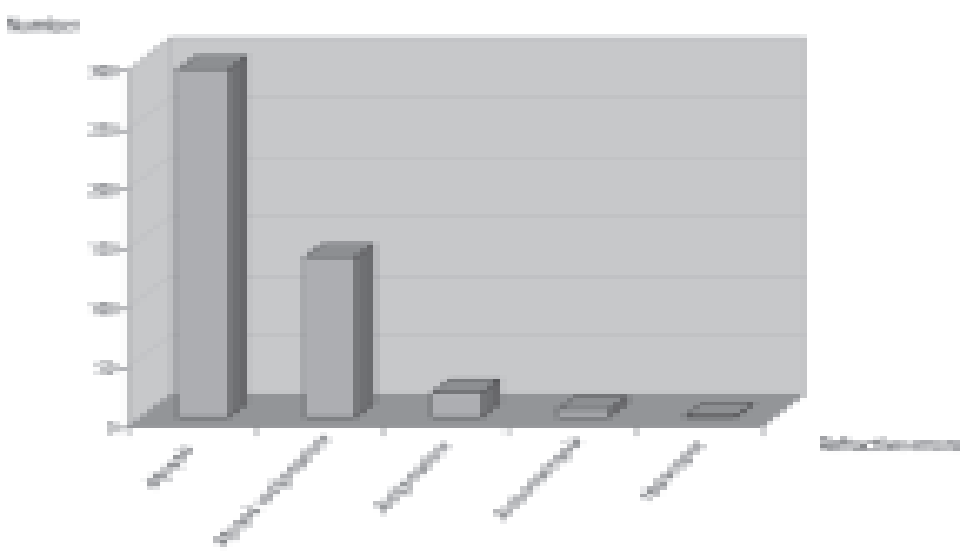

Fig. 2 Type of refractive errors in novices

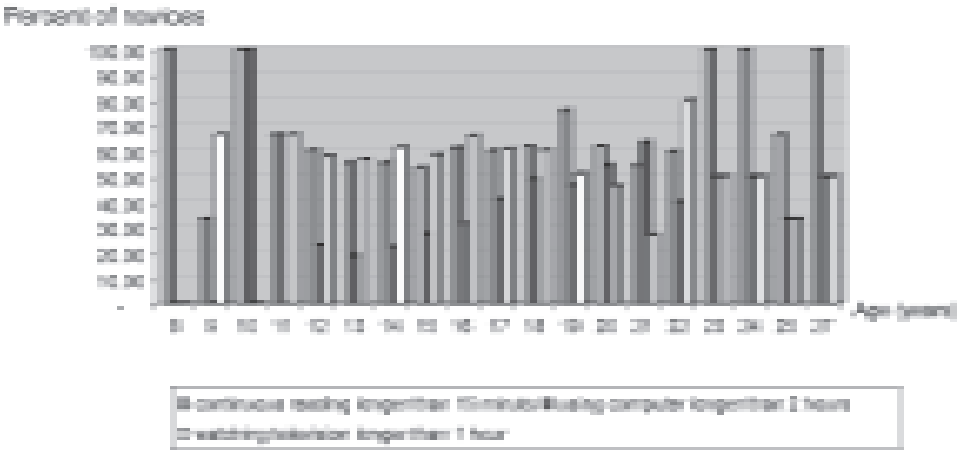

Fig. 3 Age and duration of daily visual tasks of novices

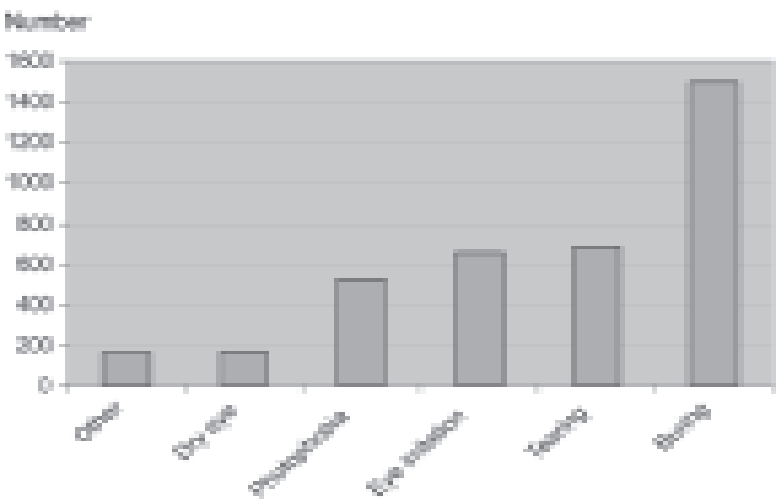

Fig. 4 Eye symptoms after prolonged visual tasks

Discussion

In the present study, it was found that refractive errors in novices were most prevalent at the age range between 14 to 17 years. Many countries have included an eye health care program in general medical examinations for their national health programs[10]. Experts in this field have agreed that an early detection of eye problems in younger children can provide early therapy and a better prognosis, since a high prevalence rate of myopia tends to increase as children grow older. This is due to elongation of the axial length of the eye and time spent using the eyesight (Fig. 3, 4), as well as the fact that amblyopia treatment tends to be difficult when children grow older[3,4,9,11,12]. The authors suggested that the percentage of amblyopia could be lowered to 4.43% if there was early detection.

Conclusion

From the survey, 18.74 % of the novices who were students in 76 schools in the Bangkok Metropolitan area had refractive errors. Almost all of them needed eyeglasses but were unable to afford them. After receiving eyeglasses, they were satisfied with a much better visual ability in school. Due to the young age of the novices, they had no serious eye diseases. Regular visual check-ups should be done annually.

For example, they should be carried out in ordinary schools as Eye Health Project of Ministry of Public Health, and Ministry of Education.

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References

1. Villarreal MG, Ohlsson J, Abrahamsson M, Sjostrom A, Sjostrand J. Myopisation: the refractive tendency in teenagers. Prevalence of myopia among young teenagers in Sweden. Acta Ophthalmol Scand 2000; 78: 177-81.
2. Flitcroft DI. Ophthalmologists should consider the causes of myopia and not simply treat its consequences. Br J Ophthalmol 1998; 82: 210-1.
3. Negrel AD, Maul E, Pokharel GP, Zhao J, Ellwein LB. Refractive Error Study in Children: sampling and measurement methods for a multi-country survey. Am J Ophthalmol 2000; 129: 421-6.
4. Pokharel GP, Negrel AD, Munoz SR, Ellwein LB. Refractive Error Study in Children: results from Mechi Zone, Nepal. Am J Ophthalmol 2000; 129: 436-44.
5. Mahachaikul A, Sinpornchai N, Kunavisarut S. The study of refractive state and strabismic prevalence in school children. Thai J Ophthalmol 1997; 11: 1-7.
6. Laatikainen L, Erkkila H. Visual screening of school children. Acta Ophthalmol (Copenh) 1980; 58: 137-43.
7. McCarty CA, Taylor HR. Myopia and vision 2020. Am J Ophthalmol 2000; 129: 525-7.
8. Liesegang TJ. The Hong Kong vision study: a pilot assessment of visual impairment in adults [abstract]. Am J Ophthalmol 1998; 125: 888-9.
9. Maul E, Barroso S, Munoz SR, Sperduto RD, Ellwein LB. Refractive Error Study in Children: results from La Florida, Chile. Am J Ophthalmol 2000; 129: 445-54.
10. Tansirikongkol V, Konyama K. Survey of visual function among school children. Transac APAO 1981; 8: 800-10.
11. Zhao J, Pan X, Sui R, Munoz SR, Sperduto RD, Ellwein LB. Refractive Error Study in Children: results from Shunyi District, China. Am J Ophthalmol 2000; 129: 427-35.
12. Rosner M, Belkin M. Intelligence, education, and myopia in males. Arch Ophthalmol 1987; 105: 1508-11.

ผลการสำรวจภาวะสายตาผิดปกติในสามเณรวัยเรียน: โครงการตรวจวัดสายตา และแก้ไขสายตาผิดปกติของสามเณรแผนกธรรม-บาลี และแผนกสามัญศึกษาในโรงเรียนพระปริยัติธรรม

อุบลรัตน์ นันทวิสิทธิ์, จิราภรณ์ ศรไชย, วัฒนีย์ เย็นจิตร

ภูมิหลัง: *ภาวะสายตาผิดปกติในเด็กวัยเรียนเป็นปัญหาที่พบบ่อยและส่งผลกระทบต่อการเรียน การคัดกรองตรวจวัดสายตาสามเณรวัยเรียนเป็นวิธีการที่ประหยัดและคุ้มค่า กลุ่มงานจักษุวิทยาโรงพยาบาลสงฆ์จึงได้จัดทำโครงการตรวจวัดสายตาและแก้ไขสายตาผิดปกติของสามเณรขึ้น*

วัตถุประสงค์: *เพื่อเป็นการตรวจคัดกรองความผิดปกติทางตาและแก้ไขความผิดปกติของสายตาของสามเณรในโรงเรียนพระปริยัติธรรมแผนกสามัญศึกษาและแผนกธรรม-บาลี พร้อมทั้งให้สุขศึกษาทางตา*

วัสดุและวิธีการ: *ศึกษาในโรงเรียนพระปริยัติธรรม 76 แห่ง ในเขตกรุงเทพมหานคร ในสามเณรอายุ 9-20 ปี โดยพยาบาลเวชปฏิบัติทางตา นักทัศนมาตร และทีมสุขภาพออกหน่วยตรวจวัดระดับการมองเห็นคัดกรองความผิดปกติทางตาตรวจวัดสายตาและแก้ไขสายตาผิดปกติโดยการให้แว่นซึ่งประกอบตามใบสั่งโดยไม่เสียค่าใช้จ่าย สามเณรจะได้รับการสอนสุขศึกษาเกี่ยวกับการดูแลสุขภาพตาอีกด้วย ตั้งแต่เดือนตุลาคม พ.ศ. 2548 - เดือนกันยายน พ.ศ. 2550 ลงปฏิบัติงานในวันหยุดราชการ*

ผลการศึกษา: *มีสามเณรได้รับการตรวจ 2,658 รูป พบสายตาผิดปกติ 498 รูป (ร้อยละ 18.74) ได้รับแว่นสายตาโดยไม่เสียค่าใช้จ่าย 465 รูป (ร้อยละ 93.37) พบสายตาสั้นมากที่สุด 313 รูป(ร้อยละ 62.85) พบความผิดปกติทางตาอื่นๆ 158 รูป (ร้อยละ 5.94) โรคที่พบมากที่สุด คือ ต้อเนื้อ/ต้อลม 51 รูป (ร้อยละ 32.27) พบภาวะตาขี้เกียจ 7 รูป (ร้อยละ 4.43) ซึ่งภาวะตาขี้เกียจควรน้อยกว่าร้อยละ 4.43 หากตรวจพบตั้งแต่แรก สามเณรที่มีความผิดปกติทางตาได้รับการส่งพบจักษุแพทย์ที่โรงพยาบาล จากการศึกษาพบสามเณรมีสายตาดีและตรวจไม่พบโรคตาใดๆ จำนวน 2,002 รูป (ร้อยละ 75.31)*

สรุป: *สามเณรร้อยละ 18.74 ที่มีสายตาผิดปกติ และยังพบภาวะตาเหล่ หนังตาตก และตาขี้เกียจ สามเณรที่ได้รับแว่นพึงพอใจมากเนื่องจากเห็นชัดขึ้นมีผลต่อการเรียนและปฏิบัติศาสนกิจได้ดีขึ้น เนื่องจากสามเณรเหล่านี้อยู่ในช่วงอายุวัยรุ่นจึงไม่พบโรคตาที่รุนแรง*