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Knowledge of eye self-care among secondary school students with myopia attending Nam Dinh Eye Hospital in 2023

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ABSTRACT

Objective: *To describe the knowledge of eye self-care among secondary school students with myopia undergoing examination at Nam Dinh Eye Hospital in 2023.* ***Methods:*** *The participants were 286 secondary school students (11-14 years old) with myopia examined and treated at Nam Dinh Eye Hospital. A descriptive cross-sectional study design was conducted. The research team developed a survey questionnaire on participants's knowledge of self-care for myopic eyes, drawing references from various studies on myopia. The total knowledge score is 24 points, the participants had satisfactory knowledge defined as providing at least 70% of the correct answers (≥ 17 points), then the average score of students' general knowledge of myopic eye self-care would be evaluated.* ***Results:*** *The average score of the students' general knowledge of eye self-care was 17.52 ± 2.71 out of 24 points, with 73.1% of the students demonstrating satisfactory general knowledge while 26.9% of the students had unsatisfactory knowledge of eye care.* ***Conclusion:*** *The participants' knowledge of self-care for myopic eyes was relatively good. It is necessary to evaluate students' nearsighted eye self-care practices to have a basis for providing appropriate interventions*

Keywords*: Students' knowledge, self-care,myopia.*

INTRODUCTION

Myopia is a refractive error in the eye and is increasingly growing, especially in students and young workers. Myopia can gradually increase in severity over time and cause dangerous eye complications if not properly treated [1]. Myopia results in reduced vision, reduces the ability to see far, and directly affects children's health, learning outcomes, and aesthetics [2]. Individuals with severe myopia are at risk of many complications such as strabismus, amblyopia, eye floaters, cataracts, glaucoma, retinitis pigmentosa, or retinal detachment [3]. In addition, costs related to myopia treatment are also a burden for families and societies [4]. Myopia among school children is increasing and is very difficult to control. In the US, according to the American Optometric Association, 1 in 3 people is shortsighted. According to data in 2021, the rate of myopia in Chinese elementary school students was 35.6% ,while for high school students, it approach nearly 81% [5].

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When suffering from myopia, there are numerous recommendations to slow down the process of increasing the shortsightedness of eyes, of which wearing correct eyeglasses is one of the simple, safe, and effective measures. In addition, children with myopia need to supplement vitamins A, E, C and minerals found in many vegetables, fresh fruits, meat, fish, and eggs; actively participate in outdoor sports activities, adjust their sitting posture when studying and have regular eye examination to limit worsening of nearsightedness [6]. Although students' practicing eye care plays an important role in reducing eye diseases in children, research on self-care knowledge among secondary school students is still limited. Research results in this field can be informative for nurses in hospitals to orient care and communication to students about myopic eye care, thereby contributing to minimizing the adverse impact of the disease on their lives. Therefore, the research was conducted: with the aim of describing the knowledge of eye self-care among secondary school students with myopia attending Nam Dinh Eye Hospital in 2023.

METHODS

Participants: All secondary school students (11-14 years old) with myopic refractive error were examined and treated at Nam Dinh Eye Hospital.

Inclusion criteria: Secondary school students with myopia, who had not yet used eyeglasses, came for examination at Nam Dinh Eye Hospital.

Exclusion criteria: Students who did not agree or cooperate with participate in the study.

Research time and location: The study was conducted at the outpatient department of Nam Dinh Eye Hospital from May to August 2023

Research design: A descriptive cross-sectional study was conducted by using a questionnaire to collect information through examination and direct interviews with the participants.

Sampling method: All eligible participants were included in the study. During the period from May to the end of August 2023, a total 286 students seeking examination and refraction correction with eyeglasses at Nam Dinh Eye Hospital were interviewed, constituting the complete sample size of 286.

Data processing: Data were coded and analyzed using softwareSPSS 20.0. Frequencies and percentages were employed to describe general information and knowledge of myopic eye care. The OR value and p value of the $\chi 2$ test was utilized to test the relationship between general information and the participants' knowledge. Statistical significance is used with $p < 0.05$.

Evaluation measurement: The questionnaire was built based on the study by Tran Duc Nghia [7], the research by Nguyen Hai Lam [8], and the research by Assef NL [9]. It consists of 2 parts:

Part A: General information about the participants

Part B: Students' knowledge of myopia self-care with 24 items. Each correct answer received 1 point and an incorrect or do-not-know answer received 0 points. The total knowledge score is 24 points. The higher score a student gets, the better their knowledge of shortsighted eye care is. The participants were considered to have satisfactory knowledge when they achieved at least 70% of the correct answers [8, 9].

After being developed, the questionnaire was sent to three ophthalmologists of the hospital to check its reliability. The test results showed that the I-CVI value of all subsections = 1 and S-CVI/UA = 1, which presented that the questionnaire had relative validity. After revising the questionnaire as per experts' advice, it was piloted among 20 students who were shortsighted to test its reliability. The test and retest method (testing time was 7 days apart) was applied. The test results reported that the correlation coefficient of the questionnaire between the two tests was r = 0.87.

Research ethics: The study had the consent of the participants and was approved by the Ethics Committee of Nam Dinh University of Nursing under Certificate number 969/GCN-HĐĐĐ dated April 26th, 2023, and permited for data collection by Nam Dinh eye hospital.

RESULTS

Table 1. General information about the participants (n = 286)

Information		Frequency (n)	Percentage (%)
Gender	Male	104	36.4
	Female	182	63.6
Age	11-12 years old	122	42.7
	13-14 years old	164	57.3
Living area	Rural	204	71.3
	Urban	82	28.7

Table 1 presented that the participants were mostly female, accounting for 63.6%. The majority of students were aged 13-14 years old (57.3%) and lived in rural areas (71.3%).

Table 2. Students' satisfactory knowledge of habits that increase myopia(n = 286)

Knowledge	Correct	
	Frequency (n)	Percentage (%)
Wrong sitting posture while studying	255	89.2
Insufficient lighting conditions	186	65.0
The sizes of tables and chairs are not suitable	184	64.3
The time of focusing eyes on work is too long	145	50.7
Watch TV/use computer > 2 hours/day	197	68.9
Spend a lot of time playing video games	232	81.1
Reading too many books/stories	236	82.5
Eat less foods containing vitamins	189	66.1
Wearing glasses with the wrong number	201	70.3

The participants' satisfactory knowledge of habits that increased myopia was relatively high; Among which, the number of students with satisfactory knowledge of "wrong sitting posture" that increased myopia of the eyes accounted for the highest rate of 89.2%; The lowest satisfactory knowledge was that the time of focusing eyes on work was too long (50.7%).

Table 3. Students' knowledge of habits that slow down the process of increasing myopia (n = 286)

Knowledge	Correct	
	Frequency (n)	Percentage (%)
Sit and study in the correct posture	211	73.8
Watch TV/use computer < 2 hours/day	234	81.8
Sufficient lighting conditions when reading and studying	242	84.6
Do not read while lying down	198	69.2
Do not read books inside the mosquito net while the light is outside the net	185	64.7
Near and far focus practice (After 45 minutes of reading, studying, working on the computer... need to look away for 5-10 minutes)	170	59.4
Distance between eyes and book ≥ 30 cm	216	75.5
Increase time of outdoor activity	224	78.3
Watch TV with a distance of 2.5 - 6m from your eyes to the TV screen	182	63.6
Eat foods containing vitamins A, C, E. etc, that are good for your eyes	178	62.2
Wear eyeglasses appropriate for the nearsightedness	215	75.2
Check eyeglasses at an eye specialist facility to adjust accordingly	245	85.7
Limit the use of digital devices 2 hours before going to bed	217	75.9
Go for regular eye examination at an eye specialist facility	238	83.2
Follow healthworkers' recommendations for eye care	229	80.1

Most of the participants had satisfactory knowledge of habits that could slow down the process of increasing nearsightedness, of which the students with the best knowledge related to "check eyeglasses at an eye specialist facility to adjust accordingly" (85.7%). However, only 59.4% of the students had satisfactory knowledge of near and far focus practice.

Table 4. Knowledge of myopic self-care among secondary school students (n = 286)

Content	Minimum	Maximum	Medium (X ± SD)
Students' knowledge increases myopia	2	9	6.42 ± 1.62
Students' knowledge slows down the process of increasing myopia	4	15	11.1 ± 2.33
General knowledge	11	22	17.52 ± 2.71

The mean score of students' knowledge in slowing down the process of increasing myopia (11.1 ± 2.33) was higher than the mean score of students' knowledge in increasing myopia (642 ± 1, 62). The mean score of students' general eye care knowledge was 17.52 ± 2.71,

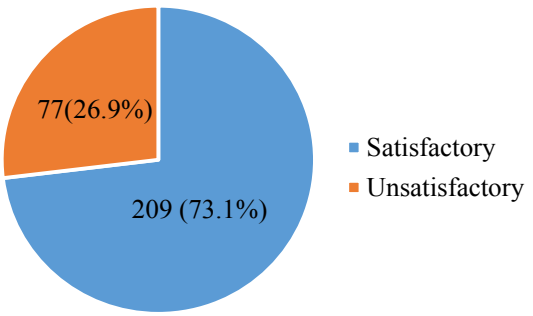

Chart 1. Classification of myopia self-care knowledge among secondary school students

Of the 286 participants, 73.1% of the students had satisfactory general knowledge of myopic eye self-care.

Table 5. Relationship between students' knowledge of myopia eye self-care and characteristics of the participants

Content		Knowledge			p χ2 test
		Satisfactory n (%)	Unsatisfactory n (%)	OR (95%CI)	
Gender	Male	67 (64.4%)	37 (35.6%)	1.96 (1.15-3.34)	0.01
	Female	142(78%)	40 (22%)		
Age	11-12 years old	88 (72.1%)	34 (27.9%)	1,087 (0.64 – 1.84)	0.43
	13 -14 years old	121(73.8%)	43 (26.2%)		
Living area	Countryside	58 (70.7%)	24 (29.3%)	1.18 (0.67 – 2.08)	0.335
	City	151 (74%)	53 (26.0%)		

Table 5 reported that there was a statistically significant relationship between gender and students' eye care knowledge (($p < 0.05$), the number of female students with satisfactory knowledge was 1.96 times higher than male students. The relationship was statistically significant with $p < 0.05$.

DISCUSSION

The research on knowledge of eye self-care among 286 secondary school students with myopia attending Nam Dinh Eye Hospital demonstrated that the number of female students (63.6%) was higher than male students (36.4%). This finding is similar to the study by Meng Liu (2022) with the rate of myopia in female and male students being 51.34% - 48.66% [10]. This rate is also corresponding to the study on school myopia by Chu Van Thang (2013) with the general rate of school myopia being 22.2% at all educational levels, among which the rate of female students was higher than that of male students (26.4% and 17.7%) [11]. The percentage of secondary school students with myopia living in rural areas was much higher than students living in urban areas

(71.3% compared to 28.7%). This result is somewhat inconsistent with the statistics of the National Eye Hospital with the rate of myopia of urban children from 20-40% and higher than that of rural children (10-15%) [12], Moreover, this finding inconsistent withthe report on blindness prevention in 2014 by Do Nhu Hon with the rate of school refractive errors accounting for about 40% - 50% of urban students and 10% - 15% of rural students [4]. This may be explained by the fact that although the national overall rate of myopia in urban areas is higher than in rural areas, in the research location (the Hospital located in Nam Dinh City) there are many eye examination private facilities, so students in urban may prefer these private facilities due to faster examination times as reported by some students.

Results in Table 2 presented that students' satisfactory self-care knowledge about habits that increased myopia ranged from 50.7% to 89.2%, in which, the satisfactory knowledge of prolonged long eye-focusing, which increasing nearsightedness, had the lowest rate. However, this knowledge is very important for students with nearsightedness because when the eyes have to continuously focus for many hours a day, for many consecutive days in a month, especially when there is a lack of light, the lens always have to regulate and are swollen, which makes them tired, stiff and difficult to regulate. If the eyes do not rest until the lens are overloaded, the eye's accommodation force will always remain too strong, which causes progressive myopia [13]. Therefore, according to the recommendation of the Ministry of Education and Training, the time of eye-focusing is no more than 45 minutes. In Australia, Jenny M. et al evaluated the relationship between near vision time and myopia with a group of 12-year-old students with the results that children who spent time reading books more than 30 minutes were at risk of myopia higher than those who regularly read for less than 30 minutes [14]. Thus, nurses need to provide health education to students about this issue so that they gradually give up habits that can increase nearsightedness. In addition, students also need to grasp knowledge of habits that slow down the process of increasing myopia to limit the progression of shortsightedness. In the study, the percentage of students with satisfactory knowledge on this issue reached >59%, of which 59.4% of them stated that near and far focus practice did not reduce the progression of myopia; 62.2% of students thought that eating did not help slow down the process of increasing nearsightedness; 63.6% of the participants believed that the distance between their eyes and TV was fine. This is unsatifactory knowledge.The factor of continuous near vision is considered the main mechanism of nearsightedness. If eyes continuously look closely without being allowed resting by looking far away, they will increase the accommodation force, which increases the progression of myopia [13]. Therefore, "'Eye care and prevention. blindness" by the Ministry of Education and Training recommended that after every 45 minutes of eye-focusing (studying, or on the phone, iPad...) people must practice looking far away for about 5-10 minutes, preferably outdoors playing [15]. However, through interviews, many students said that due to great studying pressure and lots of homework, they did not have time to stand up and walk, see far away, as well they were so busy watching phones, TVs, and computers that they did not let their eyes do far focus practice. In addition, nutrition also plays an important role in providing enough micronutrients for the eyes, including Vitamins A, E and other important micronutrients such as Chromium and calcium. Lack of vitamins and micronutrients will cause the sclera to

weaken and the eyeball axis to elongate, which increases the risk of myopia and causing faster progressive myopia [16]. This is very useful knowledge for children with myopia to reduce the progression of the disease, so during the interview process, the research team integrated counseling to help students gain success. The mean score of general self-care knowledge of myopia of students reached 17.52 ± 2.71, with the highest score was 22 points and the lowest score was 11 points out of a total maximum score of 24 points. These scores supported table 1 with 73.1% of students having quite high general knowledge of myopic eye self-care. The result is somewhat higher than the study by Le Thi Thanh Xuyen with the results of classifying students' knowledge as 16.6% good; 35.9% good; 34.3% average; and 13.3% weak [17]. Maybe because this study was on students with myopia attending hospital, who were consulted by doctors, pharmacists, and parents previously meanwhile the participants of the study by Le Thi Thanh Xuyen were at schools (including students who were not myopic), Students who do not yet have myopia may not pay attention or be less interested in eye care than those who already have it. The results of Table 5 demonstrated that there was a statistically significant relationship between myopia self-care knowledge and the gender characteristics of the participants, i.e. the rate of female students with knowledge was 1 .96 times as high as male students. This result is also similar to the result of the research by Le Thi Thanh Xuyen with the rate of female students with satisfactory knowledge being 1.35 times as high as male students (statistically significant) [17]. This may be due to female students were more meticulous than male students, so the rate of satisfactory knowledge was higher. In recent years, the Vietnam Ophthalmological Association and the Vietnamese Ophthalmology sector have coordinated with world blindness prevention organizations and non-governmental organizations to organize many workshops on school eye care. It may be said that in an effort to reduce the consequences of refractive errors and limit the severity of refractive errors in school, besides medical intervention, children's self-care knowledge is invaluable because the eyes are a very vital organ and no one can replace students in self-care.

CONCLUSION

Students' knowledge of self-care for myopia was relatively good: the mean score of students' general knowledge of self-care for their eyes was 17.52 ± 2.71 out of 24 points, with 73.1% of students with satisfactory general knowledge. There was a relationship between the satisfactory knowledge of participants and gender, the rate of female students with satisfactory knowledge was higher than that of male students with statistically significant.

Based on the research results, the recommendation is that it is necessary to improve unsatisfactory knowledge of self-care for students with myopia, such as: Do not keep your eyes focused continuously for more than 1 hour, near and far focus practice (after every 45 minutes of reading, studying, working on the computer., etc, need to look away for 5-10 minutes) and increase outdoor activities. At the same time, hospitals and medical staff should continue to evaluate myopia self-care practices to have appropriate interventions. In propaganda and health education consulting activities, nurses need to provide self-care knowledge that students often lack (not letting their eyes focus on work for too long, letting their eyes look away after 45 minutes of studying, etc.), from which students' self-care behavior for their nearsighted eyes will be improved.

REFERENCES

1. Duong Dieu. Refractive errors, Medical Publishing House, Hanoi. 2013.

2. Nguyen Chi Dung. Accommodation and presbyopia - Translated document by S. Mayer National Eye Hospital, Hanoi. 2015.

3. Lim R. Mitchell P, Cumming R. G. Refractive associations with cataract: the Blue Mountains Eye Study. Invest Ophthalmol Vis Sci. 1999, 40(12).

4. Do Nhu Hon. Blindness prevention work in 2013-2014 and plan in 2015 Proceedings of the 2014 National Ophthalmology Conference, 2014, pp. 58-63, Hanoi.

5. M. He, Zheng, Y., & Xiang, F. Prevalence of Myopia in Urban and Rural Children in Mainland China. Optometry and Vision Science. 2009, 86(1), pp. 40-44. doi: 10.1097/OPX.0b013e3181940719.

6. Douglas Fredrick. The knowledge needed to prevent myopia progression, Vietnam Journal of Ophthalmology. 2013 32, p. 53-54.

7. Tran Duc Nghia. The current status of myopia in primary school students in Dien Bien Phu city and the effectiveness of some intervention solutions [Medicine Dissertation], National Institute of Hygiene and Epidemiology, Hanoi. 2019.

8. Nguyen Hai Lam. Research on changes in awareness of school myopia among secondary school students in Nam Dinh city after educational intervention, [Master thesis], Nam Dinh University of Nursing. 2016.

9. Natnael Lakachew Assefa, Melkamu Temeselew Tegegn. Knowledge and attitude of refractive error among public high school students in Gondar City. Clinical Optometry, 2021, pp. 201-208. doi: 10.2147/OPTO.S322438.

10. Han Qin Meng Liu. Refractive errors and risk factors for Myopia in primary school students in Urumqi. Applied Bionics and Biomechanics. 2022 May 6:2022:2657455. doi: 10.1155/2022/2657455.

11. Chu Van Thang. Current status of school myopia among students in Da Lat city and Bao Lam district, Lam Dong province in 2012-2013, Journal of Preventive Medicine. 2015, 6(166).

12. Hanoi Eye Hospital 2. Current status of myopia in Vietnam, statistics of the rate in 2023, Hanoi. 2023.

13. Department of Ophthalmology, Thai Nguyen University of Medicine and Pharmacy. Optical Corrections textbook, Medical Publishing House. 2010.

14. Jenny M Ip et al. Myopia and the urban environment: findings in a sample of 12-year-old Australian school children. Investigative ophthalmology & visual science. 2008, 49(9), pp. 3858-3863. DOI: 10.1167/iovs.07-1451.

15. Ministry of Education and Training. Eye care and blindness prevention - Documents for secondary school students, Hanoi. 2020.

16. Han K. Choi JA, Park YM and La TY. Low serum 25 - hydroxyvitamin D is associated with myopia in Korean adolescents. Investigative ophthalmology & visual science. 2014, 55(4), p. 2041-2047. DOI: 10.1167/IOVS.13-12853.

17. Le Thi Thanh Xuyen. Survey on the rate of refractive errors and the knowledge, attitudes, and behaviors of students, parents, and teachers about refractive errors in Ho Chi Minh City. Medical Journal (University of Medicine and Pharmacy at Ho Chi Minh City). 2019, 13(3), p. 13-25.