

Knowledge of Primary Eye Care among Medical Students in Iran

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Received: 23 Jul 2019

Accepted: 23 Sept 2019

Citation to this article:

Heidari Z, Siamian H. Knowledge of Primary Eye Care among Medical Students in Iran. *J Iran Med Council.* 2019;2(6):222-228

Abstract

Background: The purpose of this study was evaluating the medical students' knowledge of Primary Eye Care (PEC) for determining the level of Eye Care Programs (ECPs) in Iran.

Methods: In this cross-sectional study, a self-administered questionnaire was applied to collect the data from 504 medical students at Mazandaran University of Medical Sciences. The participants answered a total of 60 questions in 4 sections. The knowledge of medical students about the PEC and the importance of developing the ECPs in Iran were evaluated. Chi-square and Fisher's exact test were used to assess the association between variables.

Results: The majority of the participants were under 30 years old and about half of them were undergraduate students and 49.4% were graduate students. About 54.4% of the subjects wore glasses and only 13.3% of them knew about the ECPs ($p=0.028$). Thirty-two and a half percent of subjects with glasses rarely had regular eye visits (at least once a year), and 42% of subjects without glasses also had blurred vision ($p<0.001$). Only 14.5% of contact lens wearers knew about the ECPs and 47.6% of them rarely had regular eye visits ($p=0.013$). About 90% of electronic device users didn't know about the PEC and related educational programs for reducing computer vision syndrome ($p=0.018$).

Conclusion: A considerable number of participants had weak knowledge about PEC and regular eye visits, and paid more attention to treatment than prevention. Preparation and implementation of educational ECPs are recommended to raise the level of PEC knowledge for improving eye health.

Keywords: Knowledge, Medical students, Primary eye care, Program

Introduction

The World Health Organization (WHO) pays a great deal of attention to Primary Health Care (PHC), especially Primary Eye Care (PEC) and the Eye Care Program (ECP). By definition, PEC is the provision of early detection and care facilities before a person needs serious and intensive treatment. According to the American Academy of Ophthalmology, PEC has different components, including eye health education, visual acuity measurement and prescription of optical aids, basic eye examination and eye screening, diagnosis of ocular symptoms, and specialist referral. To achieve these objectives, VISION 2020 was developed to decrease and prevent blindness and to enhance the quality of life secondary to visual acuity improvement and the ECP is based on these main purposes (1-4). ECP is the program in different countries that facilitates the access of visual services for reducing the loss of vision and improving eye health by raising the knowledge of eye care providers and developing the public service programs and referral centers (5).

In general, 80% of the world's population suffer from preventable and treatable visual disorders; low-vision or blindness has great impacts on the families, ranging from decreased quality of life to increased mortality and morbidity and economic consequences in a large scale (6). From cultural and social perspectives, low-vision and blindness may result in loss of social status and alterations in the decision-making capacity, which is alarming especially in low-income societies (2,4,7-9). Considering WHO reports, 87% of the people with visual deficits live in developing countries (10). Most people in these societies choose self-medication or traditional medicine upon exposure to ocular diseases and are therefore deprived of timely medical services, which may result in irreversible consequences or loss of the golden time of treatment (11-13).

However, there is no clear and specific definition of PEC and people are not aware of its importance; if health systems introduce the eye care packages and programs, it would be beneficial for the societies. Although there are simple and cost-effective treatment options, many people do not have access to them. It is important to enhance awareness regarding access to health services and put more emphasis on eye care strategies. In this regard, healthcare providers have a great role in delivering PEC. They can identify

diseases at early stage and either manage or refer patients to eye care services (2). Their knowledge and skills about primary eye care have an important role in improving eye care services. Therefore, this study was conducted to evaluate the knowledge of medical students about PEC in a group which is fundamental in determining the ECP level in Iran's health system.

Materials and Methods

This cross-sectional study was conducted at Mazandaran University of Medical Sciences. The study population was selected from different medical majors including undergraduate students [Bachelor of Science (BSc) students] and graduate students [Master of Science (MSc), General Medical students (GMs), Doctor of Philosophy (PhD)]. Data was collected through an evaluated self-administered questionnaire that was developed by South California College of Optometry. It was translated into Persian and localized by a research team, and its validity and reliability were evaluated in a pilot study. This questionnaire contains 60 questions in 4 sections of demographic characteristics, use of prescription glasses or contact lenses and inclination to undergo refractive surgery, visual problems, and medical and ocular history, which were completed under the supervision of the researcher. The consecutive sampling was done; every subject meeting the inclusion criteria is selected until the required sample size is achieved. The sample size was calculated based on a precision of 5% and an estimated 504 subjects. Informed consent was given before completing the questionnaires. The subjects were assured that the collected data were solely used for research purposes and were confidential and anonymous. The relationship between glasses and contact lens usage and age, gender, and marital status and the knowledge of students about PEC and their participation in ECPs in both groups was evaluated. The visual problems of the participants were also evaluated in both groups.

Statistical analysis

SPSS software (version 23; IBM Inc., New York, NY, USA) was used for data analysis. Descriptive statistics were applied to present demographic characteristics, and Chi-square and Fisher's exact test were performed to evaluate the correlations and associations between variables. p values < 0.05 were considered significant.

Ethics

The research project was approved by the Ethics Committee of Mazandaran University of Medical Sciences (Code: IR.MAZUMS.REC.1397.2914) and adhered to the principles of the Declaration of Helsinki.

Results

Demographic factors

Among participants, 56.6% were female and 88% were single. Most of the respondents were under 30 years old (89.2%). About half of the participants were undergraduate students (50.6%) and the other were graduate students (49.4%) (Table1). About 52.4% of the subjects below 30 years and 71% of the subjects above 30 years wore glasses ($P<0.001$); of these, only 15% of students in each group used spectacle only for near vision. Married participants wore glasses more than single subjects ($p=0.004$); however, there was no significant difference in contact lens wearer ($p=0.6$).

Glasses usage factors

Generally, about 54.4% of the subjects wore glasses of whom 35% were regular wearer (used full time), with no significant difference between men and women wearing glasses ($p=0.2$). Graduate students wore glasses more than other subjects ($p<0.05$). Table 2 shows the frequency of the use of glasses and contact lenses in different groups.

About 67.5% of the subjects with glasses had regular eye visit (eye visit at least once a year) and 86.5% of students without glasses were rarely visited by an optometrist or ophthalmologist for checking their ocular and visual health; they had less ophthalmic treatment than the students with glasses ($p<0.001$) (Table 3). Seventy percent of students who knew about the ECPs wore glasses ($p=0.028$).

Contact lens usage factors

Nearly 63% of the respondents had no interest in contact lens use. Among contact lens wearers, prescription contact lenses were more common than cosmetic contact lenses (61 vs. 39%); however, women wore contact lens more than men (43 vs. 26.5%) ($p<0.001$). In addition, the lack of interest in wearing contact lenses had no association with educational level ($p=0.094$).

Table 1. Respondents' characteristics

Gender status	N (%)
Male	219 (43.4%)
Female	285 (56.6%)
Total	504
Age	
<30	450 (89.2%)
≥30	54 (10.7%)
Total	504
Course	
Dentistry	12 (2.4%)
Medical	207 (41.2%)
Medical Emergency	12 (2.4%)
Occupational therapy	79 (15.7%)
Operating room	59 (11.8%)
History of medical science	18 (3.6%)
Health information technology	20 (4%)
Anesthesia	85 (16.9%)
Health	12 (2.4%)
Total	504
Education	
Undergraduate	255 (50.6%)
Graduate	249 (49.4%)
Total	504
Marital status	
Married	60 (12%)
Single	444 (88%)
Total	504

Table 2. Participants' responses regarding the use of glasses and contact lens

Grades (N=504)	Glass (N, %)			Contact lens (N, %)		
	Yes	NO	p value	Yes	NO	p value
Undergraduate	119 (46.7)	136 (53.3)	<0.001*	88 (37)	150 (63.0)	0.773
Graduate	155 (62.2)	94 (37.8)		82 (35.3)	150 (64.7)	
Undergraduate (Bachelor of science students)						
Graduate (Master of science, General Medical student and Doctor of Philosophy students)						
*Significant p value<0.05						

There was a significant difference between contact lens users and non-contact lens users regarding awareness of ECPs; however, more than 80% of contact lens wearers didn't know about ECPs and had a low level of regular eye visit and didn't receive appropriate ophthalmic treatment ($p < 0.001$) (Table 3). About half of the respondents (51%) were not interested in refractive surgery instead of using contact lenses or corrective glasses (53.2% of women and 46.8% of men) ($p = 0.047$), which was not related to educational level ($p = 0.863$).

Vision complications factors

Figure 1 shows different visual problems in the studied subjects. According to our findings, 11.5 and 42% of the subjects with and without glasses and 10% of the contact lens wearers had a blurred vision, respectively. Moreover, 22% of the subjects complained of floaters, headaches, or eye pain. Of respondents with at least one ocular problem, 44% rarely had regular eye visits of whom 72% received ophthalmic treatments, and 84% never knew about ECPs ($p < 0.001$). No systemic diseases were observed in the participants.

Electronic devices usage factors

Nearly all (98.8%) of the respondents used electronic devices such as laptops, computers, tablets, and cell phones. Furthermore, 43% of the subjects who worked with the mentioned devices for at least 2 hours a day did not know about ECP ($p = 0.08$). Forty-two percent of electronic users reported many ocular problems within the early minutes of using these devices and few users knew about ECPs ($p < 0.001$) (Table3).

Discussion

Most of the subjects were undergraduate students aged less than 30 years old. People with higher educational levels are more likely to use prescription glasses. The male to female ratio was almost 1:1 and there was no significant difference in wearing glasses while women wore contact lenses more than men, which could be due to cosmetic reasons. The cooperation of women and men in completing the questionnaires was equal in our study; in contrast, some studies reported women to have more cooperation in answering questionnaires (14,15).

It was found that the students with glasses almost had regular eye visit but some of them had still blurred

Table 3. Distribution of eye service among medical students with a positive response (YES)

	Eye care program (N, %)	p value	Eye visit (N, %)	p value	Eye treatment (N, %)	p value
Glass user	36 (13.3)	0.028*	184 (67.5)	<0.001*	218 (84.2)	<0.001*
Contact lens user	24 (14.5)	0.013*	89 (52.0)	<0.001*	101 (62.3)	0.076
Electronic device user	49 (10.1)	0.018*	211 (42.5)	<0.001*	262 (55.0)	1.00

*Significant p value < 0.05

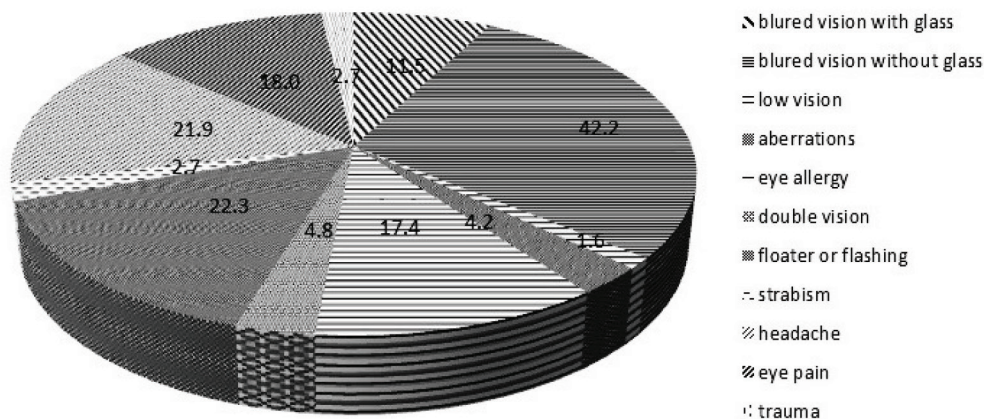


Figure 1. Ocular problems evaluated in study subjects

vision. Of subjects without glasses, more than 40% had a blurred vision and most of them had rare eye visits. Furthermore, 44% of the subjects with at least one ocular problem seldom visited a doctor. Almost all students worked with electronic devices while most of them never participated in any ECPs because there were no regular educational programs to teach them how to protect their eyes when using these devices. The level of knowledge and performance regarding eye protection against electronic devices was reported weak to good. (15-17) Our results indicate that medical students are unaware of PEC because of the lack of appropriate training programs in the field of health care that may lead to the development of visual disorders in the community.

In our study, the subjects who wore glasses or contact lenses also had weak information about the eye care programs; however, 70% of subjects who had eye care practice only used glasses. Similarly Reddy *et al* (18) reported that participants who used prescription glasses or contact lenses had a poor eye care practice while in contrast, Amirul *et al* (17) found a good eye care practice in university staff. This difference could be explained by the subject's access to vision care training programs in different communities; people may not have access to these services due to financial problems.

Also, a significant association was found between the use of glasses and level of education, while the eye care practice and eye visit were not significant between two study groups. People with a higher level of education may prefer to wear glasses to be less involved with common computer eye syndromes such as dry eye and tearing as a result of more reading and studying and increased computer work. In contrast, Fotouhi *et al* (19) evaluated eye care in the population of Tehran (Iran) and found that 16% of the educated people had eye care visits and 25% of them were examined within the last 5 years. They defined educated people as individuals with more than 12 years of schooling which differed with the categorization of participants in our study.

Generally, it was found that students had weak eye care and rare eye visits, and on average only 12.5% of the subjects in all groups had knowledge about the ECPs and cared more about the treatment than prevention. The knowledge and attitude of these people towards ECPs should be rectified. If this study had been performed in a non-academic population, eye care knowledge and performance could have been even weaker. This theory is supported by the results of studies which show the weaker knowledge and poor performance of ordinary people versus academic staff (14,20).

Eye care practice and regular eye visits and access to health care services may be different in various countries depending on their population characteristics or their main objective, e.g. control of certain diseases like diabetes or glaucoma (21,22). Economic priority, health care needs, and health service performance are important items for designing and developing eye care programs and additional funding in support of these services may be needed. Mafwiri *et al* (23) found that training programs for health workers could improve their knowledge and eye health skills. These goals were achieved in Uganda with a volunteer health team in a village by supporting other health providers (24). Primary eye care is as important as treatment, a matter which has been recently discovered in Africa after 30 years; a study conducted in Tanzania on the knowledge of the people responsible for PEC showed a weak level of knowledge (25). Another study also reported the poor knowledge of 88 primary healthcare providers in PEC and indicated that they needed reeducation in this regard (26).

Conclusion

In conclusion, according to the results of this study, it is recommended to design and implement educational programs to promote the health provider's knowledge and information. These programs can be used by health care providers and educational institutions for improving eye health and preventing visual disorders.

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