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Awareness and Knowledge About Refractive Surgery Among Medical Students in Baghdad

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ABSTRACT

Purpose: Refractive error represents a common eye disorder that can significantly impact an individual's visual function and overall well-being. There are several methods of correcting refractive errors and objective of this study was to assess the awareness of refractive surgery and the preferred methods of refractive error correction among medical students in Baghdad.

Study Design: Cross sectional survey.

Place and Duration of Study: University of Baghdad Al-Kindy College of Medicine from November 2022 to March 2023.

Methods: Medical students from six Baghdad medical colleges with total sample size of 350 were included. Students who had undergone refractive surgeries and fifth and sixth year medical students were also excluded. Level of knowledge was categorized as; <50% (0-5) poor knowledge, 50-70% (6-8) moderate knowledge and >70% (9-12) good knowledge.

Results: Among the students with refractive errors, 82% had knowledge about their refractive error. Forty percent had myopia, 12% had astigmatism, 15 % had myopia and astigmatism, 10% had hyperopia, 5% had hyperopia and astigmatism. Among them 57.8% were not willing to undergo refractive surgery due to fear of complications. Forty eight percent had poor knowledge,43.1% had moderate and only 8.26% had a good knowledge of refractive surgeries. The majority preferred eyeglasses (82.6%) followed by both eyeglasses and contact lenses.

Conclusion: Students had good awareness about refractive surgery but their familiarity and knowledge about it remained poor because of complications. An overwhelming majority of students still preferred spectacles as the method for vision correction.

Key Words: Refractive errors, Refractive surgery, Myopia, Astigmatism, Hyperopia.

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INTRODUCTION

An optical imperfection that is related to the inability of the eye to focus the incident parallel light rays on the retina resulting in a state of blurred vision is known as refractive error.[1] Eyeglass is an easy and safe way to correct refractive errors. Contact lenses is another nonsurgical method which provide full field of vision but carry risk of infection and require meticulous care.[2]There are various refractive procedures and laser assisted in situ keratomileusis (LASIK) being the most popular one.[3] It is effective and predictable to obtain very good to excellent visual acuity.[4] Photorefractive keratectomy(PRK) is used to correct mild to moderate myopia. Laser subepithelial

keratomileusis (LASEK)technique avoids any corneal flap-related LASIK complications and reduce the risk for developing dry eyes.[5,6] Small incision lenticule extraction (SMILE) is a procedure that treat refractive errors with excellent post-operative outcomes.[7,8]

Serious complications of LASIK are rare and one of the most common transient side-effects from LASIK is dry eyes.[9,10] A significant reduction in postoperative tear production as well as tear break up time (TBUT) was seen with LASIK, and no significant reduction in postoperative tear production and TBUT was seen with SMILE, and PRK.[11] Other side effects may include eye discomfort, blurry vision, halos, glares, sensitivity to light and difficulty with night vision and/or driving at night.[12] For most people, LASIK recovery time is very fast and patients resume normal activities within a day or two. Generally, visual recovery after LASEK is significantly slower than after LASIK and often slower than the recovery after PRK.[13]

A general inspection of undergraduate medical students in our college revealed many of them wear eyeglasses. We therefore undertook this study to determine how well do Baghdad medical students know about refractive surgeries as a method for vision correction as well as determine their fears, apprehensions and their willingness to undergo such procedures. Amidst the rapid advancement of refractive surgery technologies and the relatively low incidence of complications, our objective was to evaluate the awareness and knowledge levels of medical students from various colleges regarding refractive surgeries. Additionally, we aimed to determine their preferences for specific methods of refractive correction. This investigation holds significant value for shaping public health awareness initiatives and guiding academic lecturers in effectively teaching students about the diverse approaches to correcting refractive errors.

METHODS

A cross sectional study was done including medical students from six Baghdad medical colleges with total sample size of 350. The responses were collected from 12th of November 2022 to 15th of March 2023. Data was collected by using questionnaire (Google form) which was approved by the scientific committee of Al-Kindy college of medicine. Students agreed for their responses to be analyzed and published.

We included students of first to fourth year of medicine with refractive errors and age ranging from 18-23 year. Students who had undergone refractive surgeries were excluded. We also excluded fifth and sixth year students owing to the knowledge they had acquired from ophthalmology lectures which are scheduled for year 5 in medical colleges in Iraq. Microsoft Excel was used to collect and organize the data. In addition, it was used for coding of the qualitative values into numerical ones. Statistical analysis was performed by using SPSS v.24.A P value of <0.05 was considered to indicate a statistically significant difference.

Depending on students' answers, level of knowledge was categorized into 3 major cut-offs: <50% (0-5) poor knowledge, 50-70% (6-8) moderate knowledge and >70% (9-12) good knowledge.

RESULTS

A total number of 350 medical students from year one through four from six Baghdad medical colleges participated in this study. There were 71.6% female respondents and 28.4% males. The majority of respondents were from Al-Kindy Medical College (40%) and 4th year medical students (57.2%). Demographic data is shown in Table 1. Distribution of refractive error within the included sample is shown in table 2. Majority of the respondents (89.9%)were aware of surgery being used to treat refractive errors. There were 49% who were familiar with LASIK and 7% were not familiar with any procedure as demonstrated in Table 3. A total of 57.8% of the

Table 1: *Distribution of students according to their Demographic Characteristics.*

Variable		No.	%
Gender	Female	78	71.6%
	Male	31	28.4%
Age	18-23	350	100%
Medical College	Al-Kindy	140	40 %
	Baghdad	85	24.3%
	Mustansirya	58	16.5%
	Al-Nahrain	25	7.2%
	Ibn-Sina	22	6.3%
	Al-Iraqiya	20	5.7%
Stage/year of study	Year 1	25	7.1%
	Year 2	30	8.6%
	Year 3	95	27.1%
	Year 4	200	57.2%
Total		350	100%

Table 2: *Refractive Errors Among Medical Students and Method of Correction.*

Variable		No.	%
What type of refractive error do you have?	Nearsightedness	140	40%
	Astigmatism	42	12%
	Nearsightedness, Astigmatism	52	15 %
	Farsightedness	35	10%
	Farsightedness, Astigmatism	18	5 %
	I don't know	63	18 %
What method of correction do you use?	Eyeglasses	289	82.6%
	Both eye glasses and contact lenses	35	10.1%
	Only contact lenses	6	1.8%
	None of the above	20	5.5%
Total		350	100%

Table 3: *Awareness of Refractive Surgeries among Medical Students and Willingness to Undergo Surgery.*

Variable		No.	%
Are you aware of surgery being used to correct blurry vision?	No	36	10.3%
	Yes	314	89.7%
What procedure are you familiar with?	LASIK	172	49%
	LASEK	77	22%
	Femto-LASIK	42	12%
	PRK	14	4%
	SMILE	21	6%
	None of the above	24	7%
Are you willing to undergo refractive surgery	No	202	57.8%
	Yes	148	42.2%
If no, why not	Cost of surgery	35	10%
	Fear from complication	147	42%
	I'm scared of LASER	105	30%
	Lack of information	63	18%

medical students were not willing to undergo refractive surgery and the main reason was fear of complications (42%). Other reasons were fear of lasers (30%), cost of surgery (10%) and lack of information (17%).

Source of knowledge is depicted in chart 1. Only 16% reported their source of knowledge was an ophthalmologist.

After conducting a questionnaire consisting of 12 questions to determine the knowledge level of students, the results showed that 48.6% of students had poor knowledge, 43.12% had moderate knowledge and 8.26% had good knowledge. No association was found between year/stage of study and level of knowledge. Chart 2 demonstrates the knowledge assessment results.

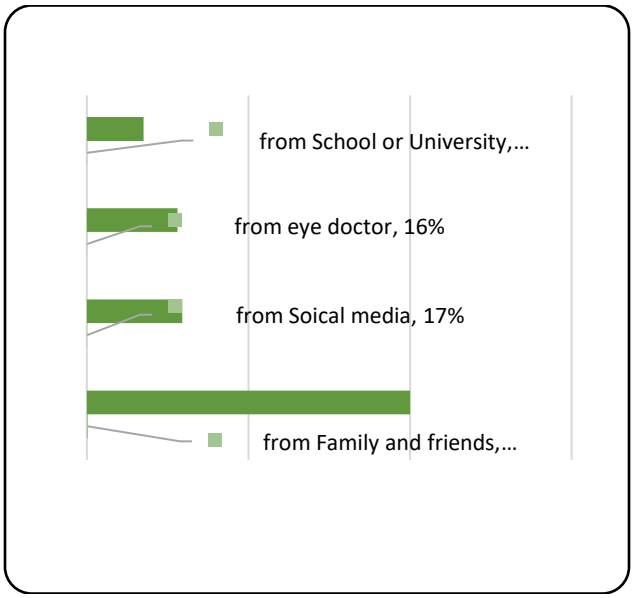
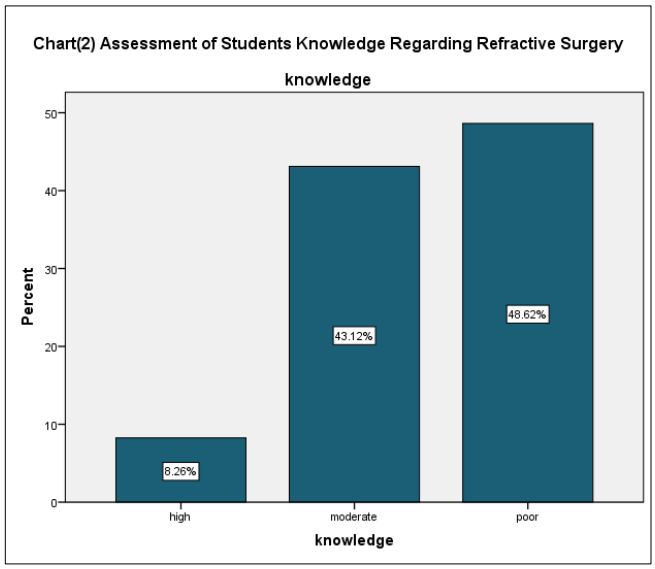


Chart 1: Source of knowledge concerning refractive surgeries.



DISCUSSION

Ever since the breakthrough of the first refractive laser surgery on a human in 1989, the number of people turning towards laser surgery for vision correction has skyrocketed. Millions of people find refractive surgery an attractive option for its long lasting effects and the freedom from wearing eyeglasses.[1]

Among the 350 participants, myopia had the highest prevalence with 40% of students being myopic. The prevalence of other refractive errors were as follows: 12% were astigmatic,15% were myopic and astigmatic, 10% were hyperopic, 5% were hyperopic and astigmatic. According to Rattan et al study where 400 participants were included during the period of E-Learning, 94.8% of students had refractive errors in AL-Kindy College of Medicine in Iraq.[1]In a cross-sectional study that was conducted among a sample size of 374 medical students at King Abdul-Aziz University Hospital, the prevalence of myopia was 66.7% which is still higher than the current study (40%). It should be noted that the mentioned study was done during COVID pandemic and it was assumed that the frequency of myopia, astigmatism and hyperopia was 66.7%, 35.6%, and 31.1% respectively.[14]

Another study conducted on medical students from Al-Jouf region of Saudi Arabia demonstrated that 83.1% were suffering from refractive errors, 74.13% of them were myopic, and 53.73% of them had astigmatism.[15]

A study in India including 227 students, found myopia in 89.42% and hyperopia in 10.13%.[16] Myopia was consistently found to be the most common refractive error among medical students in other studies as well.[17,18] However, the current study showed lower frequency of myopia as compared to previous studies among medical students. This can be explained by the study parameters as we included myopia and myopic astigmatism as separate groups and there were 18% of the students who did not know the type of refractive error they had. Medical students spend a considerable amount of time studying either reading physical textbooks or studying virtually on their iPad and computers which can be a risk factor for developing myopia.

Our study reports that although students are aware of refractive surgeries, they lack detailed knowledge about the procedures. Specifically, the awareness rate among students in the current study is 89.9%, which is similar to the awareness rate reported in a study from India, which stands at 92.51%. This outcome was expected, especially since the participants in the current study were medical students. Given their background in medicine, it is reasonable to anticipate that they would have a good understanding of common medical procedures such as refractive surgeries. This finding underscores the importance of considering the educational background of participants when interpreting study results, as it can significantly influence their level of awareness and understanding of certain topics.

It appears that while awareness of refractive surgeries was high among the participants, their level of knowledge regarding the details of the procedures and their safety was generally poor to moderate. This finding suggests that while participants were aware of the existence of refractive surgeries, they lacked in-depth understanding of the procedures and their safety aspects. The fact that most respondents obtained their information from family and friends highlights a potential gap in formal education or sources of information specific to refractive surgeries. Additionally, the decision to exclude fifth-year students, who typically receive ophthalmology lectures and might be expected to have better knowledge, provides a clearer picture of the knowledge level among the targeted group of participants.

There were limited number of studies assessing level of knowledge about refractive surgery among medical students. However, one study conducted in 2019 on a general population in the western region of Saudi Arabia Found good knowledge among 53% of the participants.[19] They concluded that factors including young age, female gender, living in Taif, postgraduate, having no presbyopia and wearing neither contact lens nor glasses were associated with a higher level of knowledge, whereas older age, living in Makkah and having either intermediate or secondary education were significantly associated with a lower level of knowledge.[19]

In our study only 42.2% were willing to undergo surgery. The reported reason among unwilling were fear of complications (42%), fear of laser, cost of surgery and lack of information. In a comparable study 36.66% were willing to undergo refractive surgery and other 65.92% who were not willing to undergo refractive surgery had the fear of complications.[16]

Students were well versed about surgery as a method for correction of refractive errors but their familiarity and knowledge about it remained poor which resulted in fear of complications. They preferred spectacle (82.6%), followed by contact lenses (10.1%). It was comparable to another study where the most preferred correction method was spectacles (45.8%).[14] Among general population in west Saudi Arabia, 49% of the participants were using

either glasses or contact lens to correct their refraction error.[20] Eyeglasses remain the preferred method of vision correction among students and general population. Reasons for this could be because they are easy to use and require minimal care.

Limitations of this survey was a sample limited to medical students in Baghdad medical colleges. The method of data collection was an online questionnaire which can lead to response bias, sampling issues(small sample size) and chance of survey errors.

CONCLUSION

Although there was good awareness about refractive errors among medical students, willingness to undergo surgery was much lower mainly due to fear of complication. The students had limited information and poor knowledge about refractive surgery which can affect their interest to undergo the procedure. This may be due to the fact that many of them do not have the most reliable source of information to obtain knowledge about the subject.

We recommend that surgical methods of refractive error correction to be included in the curriculum of ophthalmology module to provide a correct knowledge about safety and efficacy of the procedures. Students should be persuaded to seek medical knowledge from certified specialist and to be a reliable source of scientific information for their families, relatives, and friends.

Conflict of Interest: Authors declared no conflict of interest.

Ethical Approval: The study was approved by the Institutional review board/Ethical review board **(174).**

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