

# Prevalence of Laser vision correction among Medical Students at King Khalid University, Abha , Saudi Arabia

Abdul-Rahman Alamri, MD\* Arwa Eid Saeed Alshahrani, MBBS\*\* Raghad Mohammed O Alhussain MBBS\*\* Noura Abdulrahman Ali, MBBS\*\*

## ABSTRACT

**Design:** Cross sectional

**Background:** Refractive errors are caused by a mismatch between the eye's axial length and optical power, resulting in blurred vision. its globally recognized as the leading cause of correctable visual impairment . Refractive errors may cause difficulties in a person's daily life activities related to vision. It can be temporarily corrected with glasses or contact lenses, and it can be permanently cured with laser vision correction.

**Methods:** This is a cross-sectional observational study conducted in the month of January to April 2021. The study population included all students of King Khalid University The health majors Students in medical colleges (Medicine, Dentistry, Pharmacy, Applied medical sciences and nursing sampling was taken from each year.

**Results:** A total of 330 medical students fulfilling the inclusion criteria completed the study questionnaire. Exact of 145 (43.9% students were at faculty of medicine, 57 (17.3% students were at Faculty of applied medical sciences, 53 (16.1% students were at faculty of nursing, 38 (11.5% were at faculty of pharmacy, and 37 (11.2% were at faculty of dentistry. Exact of 257 (77.9% students were females. As for academic year, 173 (52.4% students were at the pre-clinical years (1st to 3rd years while 117 (35.5% were at the clinical years (4th to 6th and 40 (12.1% were interns.

**Conclusion:** Finally, in this study we are looking for the prevalence of laser corneal refractive surgery (laser vision correction LVC among medical students at King Khalid University who perform these procedures and to assess their level of satisfaction.

**Keywords:** Refractive, Errors, Vision, Student

## BACKGROUND

Refractive errors are caused by a mismatch between the eye's axial length and optical power, resulting in blurred vision<sup>1</sup>. Its globally recognized as the leading cause of correctable visual impairment<sup>2</sup>. Refractive errors may cause difficulties in a person's daily life activities related to vision. It can be corrected temporarily with glasses and contact lenses and permanently with laser vision correction<sup>3</sup>. Any operation that corrects or decreases refractive defects is referred to as refractive surgery. The 2 main procedures currently being performed for refractive error correction are laser-assisted in situ keratomileusis and photorefractive keratectomy<sup>3</sup>. excimer laser-based refractive surgery is viewed as a safe and effective procedure to treat myopia, hyperopia, and astigmatism when adequate screening is performed before surgery<sup>4</sup>. Laser energy can be delivered on the stromal surface in the photorefractive keratectomy PRK procedure or deeper on the corneal stroma by the means of a lamellar surgery in which a flap is created with the microkeratome in the laser in situ keratomileusis LASIK procedure<sup>5</sup>. Each technique has its advantages, but they appear to yield similar visual outcomes 1 year after surgery. Each procedure has its own set of benefits, but 1 year after surgery, they appear to produce similar cosmetic results<sup>5</sup>. Refractive surgery has significant impact on quality of life and daily work, with benefits extending

beyond spectacle independence<sup>6</sup>. In this study we are looking for the prevalence of laser corneal refractive surgery laser vision correction LVC among medical students at King Khalid University who perform these procedures and to assess their level of satisfaction.

## METHOD

This is a cross-sectional observational study conducted in the month of January to April 2021. The study population included all students at King Khalid University the health majors Students in medical colleges Medicine, Dentistry, Pharmacy, Applied medical sciences and nursing sampling was taken from each year.

Questionnaire was used as a digital survey and distributed to all participating students in a private and anonymous manner. The participants were given the option to withdraw at any time during the survey. Questions were designed to elicit information in a concise and objective manner. In addition, logics were used in the question so the subsequent answer would base on prior response.

Questions included 3 main categories, which elicit 12 responses in demo- graphic, candidacy status and satisfaction rate.

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\* Professor  
Department of Ophthalmology  
College of Medicine  
King Khalid University, Saudi Arabia.  
E-mail: amaamri@gmail.com

\*\* Intern, College of Medicine  
King Khalid University

**Inclusion Criteria:** The health majors Students in medical colleges Medicine, Dentistry, Pharmacy, Applied medical sciences and nursing at KKU who have refractive error

**Exclusion Criteria:** 1 The students outside medical colleges.  
2 The students who don't have a refractive error.

**Data Analysis:** After data were extracted, it was revised, coded, and fed to statistical software IBM SPSS version 22SPSS, Inc. Chicago, IL. All statistical analysis was done using two tailed tests. P value less than 0.05 was statistically significant. Descriptive analysis using frequency distribution with percent was done for students' personal data, refractive errors and refractive errors surgery with student's satisfaction level. Crosstabulation was done to assess distribution of medical student's laser vision correction at King Khalid University by their bio-demographic data. Significance of relations was tested using person Chi-square test and exact probability test for small frequency distributions.

## RESULTS

A total of 330 medical students fulfilling the inclusion criteria completed the study questionnaire. Exact of 145 43.9% students were at faculty of medicine, 57 17.3% students were at Faculty of applied medical sciences, 53 16.1% students were at faculty of nursing, 38 11.5% were at faculty of pharmacy, and 37 11.2% were at faculty of dentistry. Exact of 257 77.9% students were females. As for academic year, 173 52.4% students were at the pre-clinical years 1st to 3rd years while 117 35.5% were at the clinical years 4th to 6th and 40 12.1% were interns. A total of 204 61.8% of the students had family member had laser vision correction and 291 88.2% reported that they recommend corneal laser vision correction for adult member of the family who are candidates and can effort to have it table 1.

**Table 1:** Personal data of medical students at Kink Khalid University

Personal data	No	%
<b>College</b>		
<i>Faculty of medicine</i>	145	43.9%
<i>Faculty of dentistry</i>	37	11.2%
<i>Faculty of pharmacy</i>	38	11.5%
<i>Faculty of nursing</i>	53	16.1%
<i>Faculty of applied medical sciences</i>	57	17.3%
<b>Gender</b>		
<i>Male</i>	73	22.1%
<i>Female</i>	257	77.9%
<b>Academic year</b>		
<i>1<sup>st</sup> year</i>	58	17.6%
<i>2<sup>nd</sup> year</i>	65	19.7%
<i>3<sup>rd</sup> year</i>	50	15.2%
<i>4<sup>th</sup> year</i>	37	11.2%
<i>5<sup>th</sup> year</i>	29	8.8%
<i>6<sup>th</sup> year</i>	51	15.5%
<i>Intern</i>	40	12.1%
<b>Has a member of your family had laser vision correction</b>		
<i>Yes</i>	204	61.8%
<i>No</i>	126	38.2%
<b>Do you recommend corneal laser vision correction for adult member of your family who are candidates and can effort to have it?</b>		
<i>Yes</i>	291	88.2%
<i>No</i>	39	11.8%

Table 2. Refractive errors among medical students at Kink Khalid University. The most detected reported error was myopia 80.9%; 267, followed by astigmatism 32.4%; 107, and hypermetropia 8.8%; 29. A total of 203 61.5% students reported that they are candidate for laser refractive surgery. The most reported barriers for those who were not candidate for laser refractive surgery were Medical or ophthalmic contraindication 32.3%, eye dryness 26%, Keratoconus or keratoconus suspected 15%, they don't need 11.8%, and unsuitable time 6.3%.

**Table 2:** Refractive errors among medical students at Kink Khalid University

Refractive errors	No	%
<b>What type of refractive error did you have?</b>		
<i>Myopia</i>	267	80.9%
<i>Hypermetropia</i>	29	8.8%
<i>Astigmatism</i>	107	32.4%
<b>Are you a candidate for laser refractive surgery?</b>		
<i>Yes</i>	203	61.5%
<i>No</i>	127	38.5%
<b>Barriers to be candidate for LVC n=127</b>		
<i>Medical or ophthalmic contraindication</i>	41	32.3%
<i>Keratoconus or keratoconus suspected</i>	19	15.0%
<i>Eye dryness</i>	33	26.0%
<i>Unsuitable time</i>	8	6.3%
<i>Others</i>	11	8.7%
<i>No need</i>	15	11.8%

Table 3. Refractive surgery and outcome among medical students at Kink Khalid University. Among students who were candidate for laser refractive surgery, 41 20.2% undergone laser vision correction surgery. Among those who did not undergo the surgery, waiting for suitable time was the most reported cause 74.7%, followed by high cost 30.9%, fear of complications 14.2%, Satisfied with eyeglasses / lenses 11.7%, and wait for better alternatives 8%. As for duration since surgery, 29 70.7% undergone the surgery 1 year ago, 12 29.3 since 2 or 3 years. A total of 23 56.1% undergone PRK surgery while 18 43.9% undergone LASIK surgery. Regarding students' satisfaction of the undergone procedure type, 33 80.5% were very satisfied, 7 17.1% were mostly satisfied, and 1 student was neutral.

**Table 3:** Refractive errors among medical students at Kink Khalid University

Refractive surgery	No 203	%
<b>have you ever had laser vision correction surgery?</b>		
<i>Yes</i>	41	20.2%
<i>No</i>	162	79.8%
<b>Reasons for not having LVC? n=162</b>		
<i>Fear of complications</i>	23	14.2%
<i>Wait for suitable time</i>	121	74.7%
<i>High cost</i>	50	30.9%
<i>Satisfied with eyeglasses / lenses</i>	19	11.7%
<i>Wait for better alternatives</i>	13	8.0%
<b>Since when did you do the surgery? n=41</b>		
<i>1 year</i>	29	70.7%
<i>2 years</i>	4	9.8%
<i>3 years / more</i>	8	19.5%
<b>What procedure did you have? n=41</b>		
<i>LASIK</i>	18	43.9%
<i>PRK</i>	23	56.1%

How satisfied/ dissatisfied are you with the result of your corneal laser refractive error surgery? n=41		
Very satisfied	33	80.5%
Mostly satisfied	7	17.1%
Neutral	1	2.4%

Table 4. Medical student’s laser vision correction at King Khalid University by their bio-demographic data. Undergoing the surgery was insignificantly higher among faculty of pharmacy 23.3% students, followed faculty of medicine 22%, and faculty of applied medical science P=.636. Also, 23.1% of female students undergone the surgery versus 19.5% of males P=.618. Exact of 32.1% of interns undergone the surgery in comparison to 23% of those at their clinical years and 14.9% of students at the pre-clinical years with recorded statistical significance P=.049. Exact of 20.7% of the students with member of family had laser vision correction undergone the surgery compared to 14.3% of those who did not P=.568. The surgery was done for 21% of the students with myopia versus 16.1% of those with astigmatism and 14.3% of others with hypermetropia P=.614.

**Table 4:** Medical student’s laser vision correction at King Khalid University by their bio-demographic data

Factors	have you ever had laser vision correction surgery?				p-value
	Yes		No		
	No	%	No	%	
<b>College</b>					
Faculty of medicine	18	22.0%	64	78.0%	.636
Faculty of dentistry	5	21.7%	18	78.3%	
Faculty of pharmacy	7	23.3%	23	76.7%	
Faculty of nursing	3	9.7%	28	90.3%	
Faculty of applied medical sciences	8	21.6%	29	78.4%	
<b>Gender</b>					
Male	9	23.1%	30	76.9%	.618
Female	32	19.5%	132	80.5%	
<b>Academic year</b>					
Pre-clinical years	15	14.9%	86	85.1%	.049*
Clinical years	17	23.0%	57	77.0%	
Intern	9	32.1%	19	67.9%	
<b>Has a member of your family had laser vision correction</b>					
Yes	28	20.7%	107	79.3%	.786
No	13	19.1%	55	80.9%	
<b>Do you recommend corneal laser vision correction for adult member of your family who are candidates and can effort to have it?</b>					
Yes	39	20.6%	150	79.4%	.568 <sup>§</sup>
No	2	14.3%	12	85.7%	
<b>What type of refractive error did you have?</b>					
Myopia	37	21.0%	139	79.0%	.614
Hypermetropia	2	14.3%	12	85.7%	
Astigmatism	10	16.1%	52	83.9%	

P: Pearson X<sup>2</sup> test  
\* P < 0.05 significant

§: Exact probability test

## DISCUSSION

To our knowledge, this is the first study at King Khalid University to report the prevalence of laser corneal refractive surgery laser vision correction LVC and satisfaction among medical students.

Many people think of LVC laser vision correction or refractive surgery when they think of vision correction surgery. In this study, 330 medical students were share to discuss their refractive surgery experiences. According to table 1, 204 61.8% of the students had a family member who had laser vision correction, and 291 88.2% of the students reported they would recommend corneal laser vision correction for an adult member of the family.

Although LVC is incredibly effective, not every patient is a good candidate for it. However, in addition to LVC, there are a variety of corneal refractive operations available to cure astigmatism, near-sightedness myopia, and hypermetropia.

According to the findings of this survey, 203 students 61.5% said that they are candidates for laser refractive surgery. However, several LVC eye surgery adverse effects, such as dry eyes and keratoconus, have been reported. This type of condition is quite rare, and it usually goes away after a few weeks or months. Very few people consider it to be a long-term issue.

On the basis of medical students at Saudi Arabia's King Khalid University, 41 20.2% of those who were candidates for laser refractive surgery underwent laser vision correction surgery. Some are not completed due to concerns about complications; they require advice. Some of them don't mind wearing spectacles.

Photorefractive keratectomy PRK and intraocular lenses IOL are two alternatives to LVC, although according to the study, some candidates also rely on PRK. Both of these laser surgery procedures are used to improve vision. A total of 23 56.1% applicants underwent PRK surgery, whereas 18 43.9% candidates underwent LASIK surgery.

According to one study<sup>7</sup>, between 2005 and 2010, 22% of patients seeking refractive surgery at a university-based facility "changed their minds" after a surgical consultation. The main reason was a belief that surgery's hazards outweighed its advantages; the authors highlighted that this group shrank with time, probably due to improving technology and a perception of lower risk. Another study found that 15% of patients did not proceed with LASIK because of expense or "unscientific fear"<sup>8</sup>.

According to medical students at King Khalid University, laser eyesight repair is available based on their bio demographic date. Surgery was performed on 21% of students with myopia, 16.1% of those with astigmatism, and 14.3% of those with hypermetropia.

## CONCLUSION

**Finally, in this study we are looking for the prevalence of laser corneal refractive surgery laser vision correction LVC among medical students at King Khalid University who perform these procedures and to assess their level of satisfaction.**

**Authorship Contribution:** All authors share equal effort contribution towards (1) substantial contributions to conception and design, acquisition, analysis and interpretation of data; (2) drafting the article and revising it critically for important intellectual content; and (3) final approval of the manuscript version to be published. Yes.

**Potential Conflict of Interest:** None

**Competing Interest:** None

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