

ASSESSMENT OF MEDICAL STUDENT'S PERCEPTIONS AND KNOWLEDGE REGARDING REFRACTIVE ERRORS AND ITS CORRECTION METHODS: A CROSS-SECTIONAL STUDY

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Abstract

PURPOSE: To assess the level of knowledge and attitude towards refractive errors and its corrective methods including refractive surgery among medical and paramedical students. **MATERIALS AND METHODS:** This cross-sectional study was conducted at a private medical college in South India on 330 medical and paramedical students in October 2023. Data was collected by employing a pre tested structured questionnaire. **RESULTS:** Most participants were aware of common refractive errors such as myopia(49.2%), hyperopia(17.3%), astigmatism(9.1%). Students perceptions of correction methods were glasses(23.3%), glasses and contact lenses(65.9%). Our study showed 221 had refractive errors. Myopia (72.2%) was the most prevalent refractive error and preferred correction method was spectacles (66.7%) due to ease of use(48.9%). 29.8% Of students have not tried contact lenses but would consider so in future when adequate knowledge regarding contact lenses are provided. Refractive surgery was well known to the participants.74% of them were aware of it and 39.9% of them were willing to have it done. LASIK(32.8%) was the most familiar surgical intervention followed by LASEK(9.3%) and SMILE(8.6%).The most stated reason for unwillingness to undergo surgery was fear of complications(46.8%). The majority of interviewees (27.6%) stated that their primary sources of information were lectures or courses.**CONCLUSION:**The research indicated that medical and paramedical students exhibited a commendable understanding and positive outlook towards managing refractive errors. The majority expressed a preference for spectacles due to their perceived convenience. Conversely, contact lenses were largely avoided by students due to apprehensions surrounding their advantages and disadvantages, with most showing little inclination to explore them in the future. Moreover, students displayed limited familiarity with refractive surgeries and hesitancy towards undergoing such procedures due to lack of adequate knowledge. It is advisable for a healthcare professional to impart thorough knowledge about various available correction methods and offer guidance to the individuals with refractive error.

1. INTRODUCTION

Refractive errors, including myopia, hyperopia, astigmatism, and presbyopia, are common visual impairments affecting individuals worldwide¹. While these conditions are often correctable, they can significantly impact the quality of life if left untreated. Surgical interventions such as LASIK, PRK, and intraocular lens implantation, along with non-surgical correction methods like glasses and contact lenses, offer effective solutions for managing refractive errors². However, awareness and understanding of these interventions among healthcare professionals, particularly medical students, are crucial for ensuring optimal patient care. Medical students represent the future generation of healthcare providers and play a vital role in addressing vision-related issues in clinical practice³. Therefore, assessing their perceptions and knowledge regarding refractive errors and various correction methods is essential for identifying areas for improvement in medical education and enhancing patient care outcomes. While previous studies have explored aspects of this topic, there remains a need for comprehensive research that encompasses medical students' attitudes toward both

surgical and non-surgical interventions for refractive errors. This cross-sectional study aims to fill this gap by investigating medical students attitudes toward awareness of refractive errors, surgical interventions, and other correction methods. By assessing their knowledge, beliefs, and perceptions in these areas, this study seeks to identify potential areas for enhancement in medical education and contribute to better patient care delivery in the fields of ophthalmology and optometry. Through a combination of quantitative and qualitative methods, this study will provide insights into medical students awareness and understanding of refractive errors and correction methods⁴. By examining associations between demographic variables and attitudes toward these interventions, this study will shed light on factors influencing medical students' perceptions in this domain. Overall, this research is significant for informing strategies aimed at improving medical curricula to better equip future healthcare professionals with the necessary skills and knowledge to effectively manage refractive errors and provide optimal care for patients⁵.

2. MATERIALS AND METHODS

A cross-sectional study design was employed to gather data from a sample of medical and paramedical students in October 2023. This design allowed for the assessment of participants perceptions and knowledge regarding refractive errors, surgical interventions, and correction methods at a single point in time. A convenience sampling method was utilized to recruit medical students from various medical fields.

Inclusion Criteria included MBBS Students, Postgraduate Medical Students, Paramedical Students between 18 to 35 years of age who have given Consent at the Time of the Study Regardless of the year of Study or Specialization.

Exclusion Criteria Included Medical Students who did not give Consent for the study. A structured questionnaire was developed to assess participants awareness, attitudes, and knowledge regarding refractive errors, surgical interventions, and other correction methods. The questionnaire comprised multiple-choice questions to assess the knowledge, Likert-scale items to gauge attitudes, and open-ended questions to gather qualitative insights. Participants were approached either in person or electronically, depending on logistical constraints, and invited to complete the questionnaire anonymously. Informed consent was obtained from all participants prior to their participation in the study. Participants were assured of the confidentiality and anonymity of their responses. Quantitative data obtained from the multiple-choice and Likert-scale items were analysed using descriptive statistics to summarize participants responses. Chi-square tests or ANOVA were conducted to explore potential associations between demographic variables (such as year of study, gender, and field of study) and attitudes toward refractive errors and correction methods. Ethical approval for the study was obtained from the institutional review board. Informed consent was obtained from all participants, and measures were taken to ensure the confidentiality and anonymity of their responses throughout the study. Limitations of the study included the use of convenience sampling, which may limit the generalizability of the findings to the broader population of medical students. Additionally, self-report measures may be subjected to biases such as social desirability bias. Efforts were made to mitigate these limitations through careful questionnaire design and data analysis techniques. Overall, this methodological approach allowed for a comprehensive assessment of medical students' perceptions and knowledge regarding refractive errors, surgical interventions, and correction

methods, providing valuable insights into this important aspect of medical education and practice.

3. SAMPLE SIZE CALCULATION AND EVALUATION

Hypothesized %frequency of outcome factor in the population (p):72.3%

Confidence limits as % of 100 (d): 5%

Sample size Calculation $n = 4PQ/d^2$

Confidence interval 95%

$N=(1.96)^2 \times 72.3 \times 27.7 / 5^2$

The sample size calculated is: 330

Data entry was done using Microsoft Excel 2016, and statistical analysis was done.

Frequencies were used to characterize categorical variables, which included primary variables. Mean and SD were used to characterize continuously distributed, normally distributed variables. With the Chi-square test, univariate analysis was carried out for a categorical variable. The study employed logistic regression to evaluate the relationships.

A 95% confidence level was included when reporting the prevalence as a percentage. P-values less than 0.05 indicated that a test was significant. We obtained consent from each participant after informing them of the study's goals and the confidentiality of their responses. Only the members of the research team had access to all of their data, which remained private. Moreover, the data collecting form was completed without the gathering of names or ID numbers.

4. RESULTS

The purpose of this study was to find out the knowledge of medical students about refractive errors, how medical students felt about refractive surgery and which type of refractive correction they preferred. 330 students replied in all. The mean age was 23.04 +/- 3.39 years with females accounting (62.8%) and males (37.2%) showing a female predominance. Refractive error was present in 49.7% and absent in 50.3% of students. MBBS medical students made up (71.5%) of the participants, followed by PARAMEDICAL students (15.7%), BSC nursing (7.8%), POST GRADUATES (5%) shown in the table

MEDICAL PROGRAMME	ENROLLED NUMBER
MBBS FIRST YEAR	16
MBBS SECOND YEAR	25
MBBS THIRD YEAR	45
MBBS FOURTH YEAR	78
MBBS FIFTH YEAR	64
POST GRADUATES	17
BSC NURSING	25
PARAMEDICALS	50

Family history of refractive error was present in 57.6% and absent in 42.4%. Myopia was the most common cause of refractive error, accounting for 72%, followed by hypermetropia at 35.6%, and astigmatism at 13.1%. Refractive error was known to 91.1% and unknown to 8.9% of participants. Myopia was the most known refractive

error(49.5%), followed by hypermetropia (17.3%) and astigmatism (9.1%) shown in. Awareness on Symptoms of refractive error included blurring of vision (85.5%), Rubbing of the eyes (3.5%), Discharge (1.3%). Risk factors for refractive error included family history (46.8%), nutritional deficiency (28.8%), unknown (21.2%).The most often utilized corrective technique waswearing spectacles (66.6%), which was followed by refractive surgery (14.6%), wearing contact lenses (8.6%), Eye medication use (4.1%). students were aware of both spectacles and contact lenses (65.9%), only spectacles (23.3%), refractive surgery (8.5%) Fig 1.

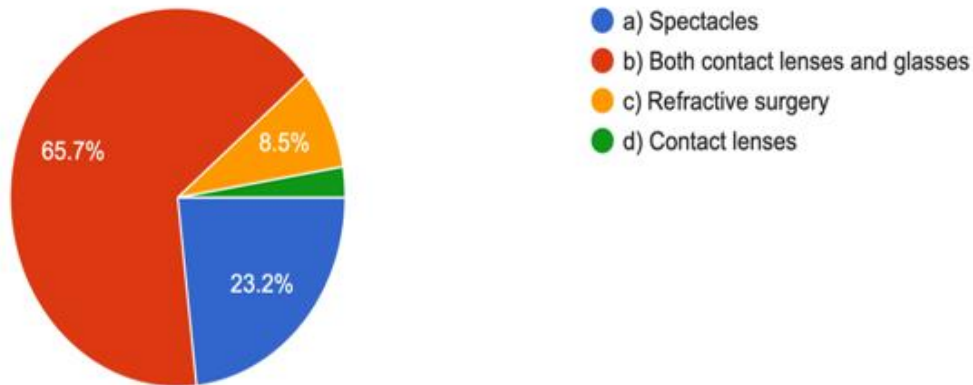


Figure 1 : Types of Correction Methods Students Were Aware of

Refractive surgery was wellknown to the participants74% of them were aware of it, and 39.9% of them were willing to have it done.But when asked what prevented them from wanting tohave the procedure, the majority said that they were afraid of the complications (24.6%).Thusamong the participants, LASIK (32.8%) was the most common kind of refractive surgeryout of various available options; the others are indicated in Fig 2.

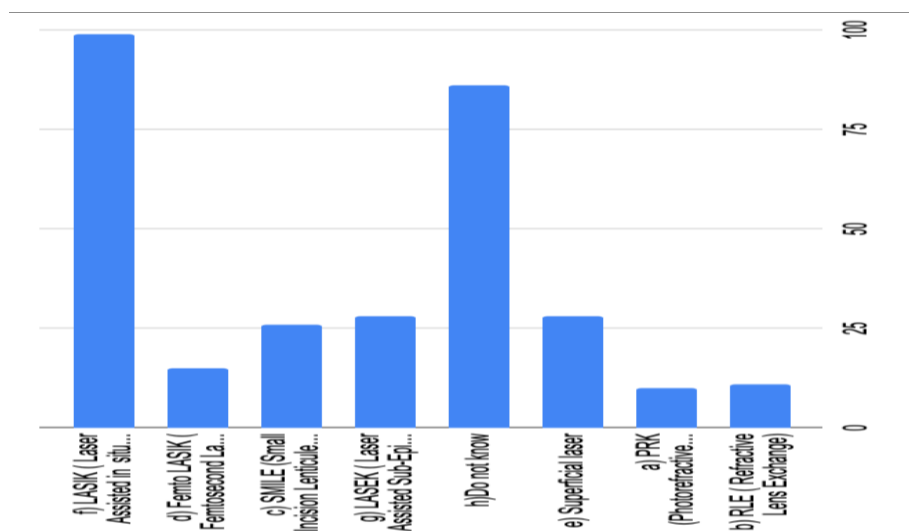


Figure 2: Type Of Refractive Surgery Students Are Aware Of

The majority of interviewees (27.6%) stated that their primary sources of information were lectures or courses.The majority of participants (65.8%) did not believe that the procedure was harmful, and less than half (34.2%) believed that the problems from the surgery were straightforward.51.8% of students questioned why ophthalmologists

didn't do refractive surgery instead of prescribing spectacles. When asked if they thought it was possible for visual weakness to recur following refractive surgery, 52% of respondents said they did. The majority of students knew about the operation, although there was no discernible correlation ($p = 0.317$) between the students medical year and their knowledge of refractive surgery. The answers to these queries are displayed in Table 1.

MEDICAL PROGRAMME	AWARENESS ABOUT SURGICAL PROCEDURE FOR REFRACTIVE ERROR
MBBS FIRST YEAR	14
MBBS SECOND YEAR	18
MBBS THIRD YEAR	30
MBBS FOURTH YEAR	78
MBBS FIFTH YEAR	62
POST GRADUATES	14
BSC NURSING	5
PARAMEDICALS	8

Table 1: Sources of Information About Refractive Surgeries Among Students In Percentage

a) Family and friend	80
b) Social media	36
c) Physician	46
d) Lectures or courses	84
e) I do not know	59

The majority of students knew about the operation, although there was no discernible correlation ($p = 0.021$) between the students medical year and their knowledge of refractive surgery. The answers to these queries are displayed in Table.

5. DISCUSSION

The purpose of this study is to ascertain medical students chosen method of refractive error correction and to gauge their awareness of refractive surgery. With the rise of social media, there are now many ways to access health information; however, not all of these sources can be trusted. Educating people about routine procedures like corrective refractive surgery is crucial. A little under half (50.3%) of the 330 medical students reported having refractive error. Higher education has been linked to a higher prevalence of refractive errors. One possible explanation for this higher occurrence could be the extended study periods these students take, which can lead to stress. According to our findings, the majority of people with refractive error had myopia (72%) which was followed hyperopia at 14.8%, astigmatism 13.1% respectively. Myopia is the most common refractive defect, according to studies on the prevalence of refractive errors. Particularly, myopia has been demonstrated to be strongly correlated with educational attainment. Refractive defects can be corrected by spectacles, contact lenses, or refractive surgery. For refractive error correction, the majority of respondents used both spectacles and contact lenses (65.9%) followed only by spectacles 23.3%. Refractive surgery was preferred by 8.2% of the respondents, and the least prevalent approach was the use of contact lenses alone (2.6%). The use of glasses has not changed despite the growing popularity of contact lenses and refractive surgery. They continue to be the most widely utilized type of

refractive correction. According to our findings, the majority of students (39.2%) felt glasses to be comfortable, with simplicity of use accounting for 48.9% of this finding⁹.

This is consistent with a different study conducted in Saudi Arabia, where participants said that having glasses improved their quality of life and was readily accessible. The primary reasons people found wearing glasses uncomfortable were that they restricted their everyday activities (22.2%), that they were cosmetic issues (15.6%), and that they required additional maintenance (13%)¹⁰.

Numerous research reported similar difficulties with wearing spectacles as our study did, claiming that they were inconvenient and the participants did not find them to be aesthetically pleasing. In line with previous research, 19.1% of respondents reported feeling at ease wearing contact lenses for cosmetic, practical, and easy reasons. In this study, awareness refers only to the participant's prior knowledge of the technique; it does not include complete comprehension. It was discovered that 92.1% of the individuals involved were aware of refractive correction procedures.

This awareness rate was similar to research conducted among medical school students in Brazil (92.8%) and India (92.51%)¹¹. Given that our participants were medical students and that refractive surgery is a frequent operation, this outcome was anticipated. Nonetheless, 39.9% of the students expressed a strong desire to carry out the surgery. Results strongly imply that medical students have a high degree of awareness and enthusiasm about having surgery.

The primary deterrent for those who did not think refractive surgery was fear of complications associated with the procedure (24.6%). This is a surprising outcome, given that the majority of participants thought the surgical complications were straightforward (24.6%) and not harmful (34.2%).

These findings align with those of a 2019 study conducted in Saudi Arabia. In contrast to most other studies, the procedure's cost was the one that was noted as an impeding factor the least (7.5%). When it came to the kinds of operations that people had heard about previously, LASIK and LASEK came in first at 32.8% and 9.3%, respectively¹².

There was no discernible correlation between the awareness level and the academic year. This may be explained by the discovery that the majority of what they heard from lectures and courses was how they learned about and comprehended these procedures¹³.

6. CONCLUSION

Despite being a frequently performed technique, medical students lack adequate information about corrective refractive surgery. The purpose of this study was to determine medical students' knowledge on refractive errors and its correction procedures at Sree Balaji medical college and Hospital. Our study's findings show that while the majority of students are aware of refractive surgery, only a moderate number of them are willing to have it done, primarily out of concern for potential risks. Most of the information came from Courses and lectures.

As a result, we advise that doctors present refractive surgical correction techniques to medical students during their rotation in ophthalmology during medical school and that they give them further information regarding the effectiveness and safety of these procedures.

Contributions Of The Author

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Examine the idea or design, write and manage the document, and edit and supervise it.

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Examine the idea or plan, gather information, analyse or interpret information.

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All participants gave their agreement after being informed about the study's goals and the confidentiality of their responses

Conflict of interest does not exist.

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