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Evaluating Student Attitude towards Careers in Ophthalmology as a Medical Option Southern India

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Vlogger, Musculoskeletal Discomfort, Content creation, upper extremity pain, Cumulative trauma

ABSTRACT:

Background

Although ophthalmology offers a unique combination of lifestyle balance, microsurgical precision, and technological integration, it remains underrepresented among medical students' specialty preferences in India. Perceptions that underlie these attitudes are crucial to understand.

Objective

Research was conducted to analyze the attitudes, interests and factors influencing ophthalmology as a career choice among undergraduate medical students in South India.

Methods

This cross sectional study with a descriptive design was conducted in the Southern part of India during March – May 2025 inclusive of various medical colleges. Using a stratified random sampling method, 450 MBBS students were selected for the research.

From the pre-clinical up to internship level of medical graduate were recruited. The data was collected by utilizing a pre-designed and pre-validated questionnaire. It included student's demographic variables, interest in the medical specialty, perceived characteristics of the specialty and institutional exposure to the specialty. Statistical analyses were performed using SPSS v26.0, employing descriptive statistics, chi-squared tests, and logistic regression.

Results

Among the 450 respondents, those in the age group of 21–25 years was 60.62% and 52.85% were female. 63.73% had clinical exposure to ophthalmology, and only 3.11% were likely to choose it as a career. A total of 86.53% cited lifestyle appeal while 74.61% called it a financially unrewarding specialisation. Factors contributing to employees upskilling were work-life balance(84.5%) and technological advancement(43.17%). 54% cited inadequate institutional exposure.

Conclusion

Although ophthalmology is recognized for its lifestyle and innovation, deterrents such as limited exposure, financial misperceptions, and perceived competitiveness hinder its selection. Integrating structured clinical rotations, mentorship programs, and surgical simulation experiences may enhance its attractiveness as a career for medical students in India.

Journal of Chemical Health Risks

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Introduction

Choosing a medical specialty is an important decision of a physician which will eventually affect his job satisfaction, his work-life balance and the outcome of his patients. Compared with other specialties, undergraduate medical students are less likely to select ophthalmology as a specialty though it involves medical diagnosis, microsurgery, and faster visual rehabilitation. Asian and developing countries like India too have displayed a parallel kind of trend.

Students' interest in ophthalmology is declining globally, partly due to deficiency of curriculum exposure in undergraduates due to lack of mentorship and misinformation about the specialty's scope and competitiveness. Yu et al. showed that there has been recognition with respect to lifestyle balance and technological advancement of the specialty and students' attitude in going for the choice of ophthalmology was influenced by the undergraduate curricular exposure as well as their perception with regard to the specialty undergoing accessibility (1). An investigation showed that more than half of the students feel ophthalmology is not accessible, although more than half are interested in it. Factors such as lack of early surgical exposure and minimal clinical exposure contribute.

Earlier regional cross-sectional analysis of Almulhim et al. showed the same trend amongst Saudi medical students; Ophthalmology was a subject of great interest; however, choice rarely influenced students (2). Findings indicate that the institutional culture and facilitators' presence at a department act as a game-changer for students' discourses. Without these facilitators, even a branch as high-tech as Ophthalmology does not attract candidates.

A multicentre study shows that structured clinical exposure and clarity of residency will increase the acceptance of students in attempting less popular specialties like ophthalmology. This was found out by Takeda et al. in Japan (3). The researchers also pointed out that cultural expectations that internal medicine or surgery is prestigious often outweighs personal interest and that parent and peer influences are strong determinants, which finding has great relevance in India.

Schwartz et al classified motivational factors into intrinsic (interest, lifestyle compatibility) and extrinsic (pay, contest, and value) in one of the earliest systematic assessments of career choice in medical students (4). It is possible that the other field loses out to general surgery or medicine in status and research prospects, but the field of ophthalmology scores highly on other fields, such as work-life balance and satisfaction with surgical procedure.

Al-Omari et al. have also stated in the Middle Eastern context that although nearly 70% of students agreed that the specialty has attractive work characteristics, only 12% considered it for the future(5). By showing these differences, it reveals just as much the importance of not only showing students just how to work in the field but also to dispel misconceptions regarding its scope and availability. Their study exposes a system-wide gap at the undergraduate level and a need for curriculum level interventions.

In France, Levaillant et al. carried out a large study and found that early exposure during the clinical years, especially if in the form of a well-organized ophthalmology elective, doubled the number of students opting for ophthalmology at residency selection (6). According to them, starting career counseling in preclinical years can help generate interest in specialties that are less popular but essential.

Also, gender association and socio-cultural perception also are there. In a US-based study, Chen et al. observed that female medical students assigned greater lifestyle ratings to ophthalmology, but lower ratings for its academic rigor and procedural exposure (7). Results similar to Indian centres, where students, especially females cite lack of confidence in their surgical skills as a reason of exclusion of ophthalmology in their preference list (8).

Students who take part in student-led ophthalmology interest groups or research forums are more likely to pursue ophthalmology. For the Latin America context, that emphasizes the importance of early involvement with professionals and the visibility of the specialty from the campus. (Souza et al., 9) The authors also warned that students are drawn to appealing specialties such as the dynamic, patient-centred and innovative ones. The traits of ophthalmology get buried under other characteristics.

Indian literature supports the findings of this study. Parija et al. have observed that although ophthalmology is a

Journal of Chemical Health Risks

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JCHR (2026) 16(2), 3001-3011 | ISSN:2251-6727

department rated as one of the most "work-life balanced", students prefer other departments to it. A major factor for this, they note, is the poor quality of rotations and lack of familiarity with the surgical instruments (10). Moreover, they observed that competitive examination-based filtering systems disproportionately favor high-merit students, many of whom gravitate toward radiology or dermatology, sidelining fields such as ophthalmology that require nuanced clinical aptitude and cultivation of early interest.

According to Li et al., the incorporation of institutional factors significantly influenced choice of specialty in North America. For instance, treating ophthalmology as an internship, the availability of a surgical simulation lab, and the incorporation of teleophthalmology in the undergraduate curriculum enhanced interest significantly (11). The findings indicated that areas characterized as “cutting-edge” or “future” such as areas employing artificial intelligence, robotic surgery and so on were more likely to attract the new generation of doctors. Ophthalmology is one of the highly equipment-dependent branches and must exploit that.

Last decades have witnessed a boom in ophthalmic specialty worldwide. More youth are taking ophthalmology as their choice of career. There has been a lot of misinformation surrounding this topic recently. Some people think it is a profitable specialty. Some find it to be a less demanding one. There are various misconceptions and preconceived notions that came into existence about ophthalmology. This development has increased the necessity of a study to comprehend the precise reality and perception of it.Numerous studies involving medical students from around the world share similar insights. The Hong Kong Study on 414 students opined that most of the students had a positive view on pursuing ophthalmology as a career.

This information can be used for curriculum development, mentorship, and a 3-level exposure model in medical colleges, which will create a change in perception of ophthalmology in the medical colleges. As vision impairment burdens increase and eye care makes changes to find ways to reimagine our delivery, coupled with technology that is tricky, there is a strong need for engaging medical education and career counseling to prepare motivated students who are well-informed to not just think of but prefer ophthalmology.

Materials and Methods

Study Design and Duration

A descriptive, cross-sectional study was conducted to assess the attitudes and perception of undergraduate medical students towards ophthalmology as a career choice. The study setting was chosen as per the academic timetable and the undergraduate medical students in all phases were made willing to participate in the study. The research work was performed for a period of 3 months (March to May 2025).

Study Setting

Multiple medical colleges of Southern India were involved in this study The schools were chosen with representation in different academic settings (government, semi-government and private) in mind.

Study Population and Eligibility Criteria

The target population will comprise of first-year MBBS students to the intern pursuing MBBS degree. The inclusion criteria for this study will be the undergraduate MBBS students who will give consent and will have access to the questionnaire through a digital or physical distribution form. Students with a background in paramedical and post-graduate, students who have a residency seat in ophthalmology, students who have incomplete data on the main items of the questionnaires were excluded.

Sample Size Calculation

In this formula for cross-sectional studies n=Z2 x p(1-p)/d2 it is calculated. The required sample size can be found using the following formula: n = Z2 pq/d2. Where n = required sample size, Z=1.96 (at 95 per cent of significance level), p=proportion of positive attitude towards Ophthalmology, taken as 0.5, q=1-p = 1–0.5 =0.5, d = margin of error or absolute precision = 0.05. At least 384 students will be surveyed to fulfill data. To allow for the possibility of 10–20 per cent non-response/incomplete data, a final sample size of 450 was used.

Sampling Technique

A stratified random sampling technique was used to ensure that representatives from the preclinical, clinical, and internship years of the MBBS curriculum were accessed. In addition, the faculty facilitators and class

Journal of Chemical Health Risks

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JCHR (2026) 16(2), 3001-3011 | ISSN:2251-6727

representatives mindfully ensured the equal distribution of survey forms.

Data Collection Instrument

A structured self-administered questionnaire designed for the current study was used to gather data. The formulation of this tool happened following careful assessment of existing tools in the literature and a consultation with the experts in the fields. To evaluate whether the tool was clear, relevant, and internally consistent, the questionnaire was pilot tested on 20 undergraduate students. The pilot test caused only a few minor technical changes (linguistic and formatting) to the questionnaire.

The ultimate tool was built with sections probing demographic information (age, sex, y ear of college), interest in ophthalmology before and while in medical school, perceived benefits pertaining to ophthalmology (for example lifestyle, type of surgeries, job satisfaction), barriers to the specialty choice of ophthalmology (for example, difficulty of surgery, exposure to ophthalmology during medical school, competitiveness of specialty), and external influence (peer pressure, faculty pressure, family pressure).

Mode of Administration

The survey was conducted using online as well as offline modes. The survey was distributed through Google forms and institutional email lists with adequate Internet access and digital literacy, on college campuses. Copies of the questionnaire were printed and distributed to collect them in person where students or institutions had the same impediment to digital access. In such instances, questionnaires were distributed during class time and academic gatherings. We received anonymous responses, and participation was voluntary.

Data Management and Statistical Analysis

Data that was collected through completion of responses was compiled in Microsoft Excel and exported to IBM SPSS version 26.0. The data was cleaned, coded and validated for accuracy and completeness.

The frequency and percentage value of the categorical variable was portrayed and continuous variable proportionate was presented as mean and standard deviation. To evaluate the relationship between the categorical variables: interest in ophthalmology and demographic variables, chi-squared test. The normality of the data was tested using Shapiro-Wilk test. The independent mean scores between the academic year or exposure group were assessed using independent t-test or the one-way analysis of variance. A binary logistic regression was conducted to determine the independent predictors of the willingness to choose ophthalmology after controlling covariates. All tests of inference were two-sided with a level of significance $p<0.05$.

Ethical Considerations

The Institutional Human Ethics Committee approved the study under proposal ID IHEC-I/3651/25 dated 21.03.2025. Every participant was given an information sheet that explained the study's purpose, voluntary nature and confidentiality. Informed consent was obtained (digital or written) from all participants before the commencement of the study. None of the participants were asked for their personal identifying information. Participants could leave the study without any consequences or disadvantages from the academic staff at any point during the study. Because the study was a non-clinical interventional study, minimal risk and harm was involved, and the participants were not given any monetary or academic incentive.

Results:

Table 1: Demographic and Educational Profile

Variables	Frequency (n)	Percentage (%)
Age		
18-20	170	37.82
21-25	273	60.62
25-30	7	1.55
Gender		
Male	212	47.15
Female	238	52.85
Study Period		
Clinical	210	46.63
Pre-Clinical	103	22.80
Internship	137	30.57

Journal of Chemical Health Risks

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JCHR (2026) 16(2), 3001-3011 | ISSN:2251-6727

Have you completed a clinical rotation in ophthalmology?		
Yes	287	63.73
No	163	36.27
Do you have a family member or close relative in the field of ophthalmology		
Yes	126	27.98
No	324	72.02

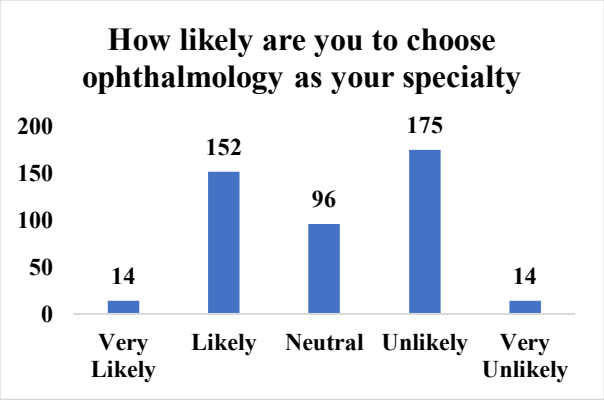
Most of the participants of current study were belonging to 21-25 year group (60.62%) with equal sex ratio (female: 52.85%). A majority of the subjects were clinical (46.63%) and internship (30.57%) students of a mature course. According to the data, most participants (63.73%) had exposure to ophthalmology, but not even close to third had familial ties to the field, suggesting that exposure is primarily academic rather than legacy-driven.

Table 2: Interest and Attitudes Toward Ophthalmology

Variables	**Frequency (n)**	**Percentage (%)**
Before entering medical school, how interested were you in ophthalmology?		
Very Interested	12	2.59
Somewhat Interested	149	33.16
Not Interested	229	50.78
Strongly Not Interested	60	13.47
Has your interest in ophthalmology changed during medical school?		
Increased	180	39.9
Stayed at same	270	60.1
How likely are you to choose ophthalmology as your specialty?		
Very Likely	14	3.11
Likely	152	33.68
Neutral	96	21.24
Unlikely	175	38.86
Very Unlikely	14	3.11
Do you think ophthalmology provides a good work-life balance?		
No	0	0
Yes	390	86.53
Not Sure	60	13.47
How would you rate the job satisfaction of ophthalmologists?		
Very High	12	2.59
High	133	29.53
Neutral	305	67.88
Low	0	0
Very Low	0	0
Do you think ophthalmology offers good financial rewards compared to other specialties?		
No	336	74.61

Journal of Chemical Health Risks
www.jchr.org
JCHR (2026) 16(2), 3001-3011 | ISSN:2251-6727

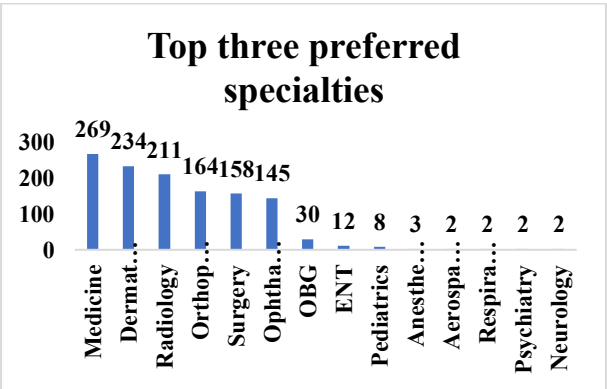
Yes	44	9.84
Maybe	70	15.54
Do you perceive ophthalmology as a competitive specialty to enter?		
No	114	25.39
Yes	291	64.77
Not Sure	44	9.84
Do you feel that your medical school provides adequate exposure to ophthalmology?		
No	247	54.92
Yes	58	12.95
Not Sure	145	32.12



Initially, preclinical students were virtually uninterested in ophthalmology, with only 2.59% being "very interested" in it. After clinical exposure, 39.9% students were more interested in it. Nevertheless, only 3.11% were "likely" to choose it as a specialty. A notable 86.53% viewed this specialty as having a good work-life balance, yet 74.61% viewed its financial prospects unfavourably. 64.77% perceived the specialty as competitive.

Table 2a. What are your top three preferred specialties?

Department	Frequency (n)	Percentage (%)
Medicine	269	59.78
Dermatology	234	52.03
Radiology	211	46.86
Orthopedics	164	36.53
Surgery	158	35.06
Ophthalmology	145	32.10
OBG	30	6.64
ENT	12	2.58
Pediatrics	8	1.85
Anesthesia	3	0.74
Aerospace Medicine	2	0.37
Respiratory Medicine	2	0.37
Psychiatry	2	0.37
Neurology	2	0.37



52.03% of respondents chose dermatology, whereas 46.86% opted for radiology. the first three overall choices were medicine, dermatology and radiology. Occupying the 6th position with 32.10%, Ophthalmology had a moderate performance among the first choices. Summary was reported.

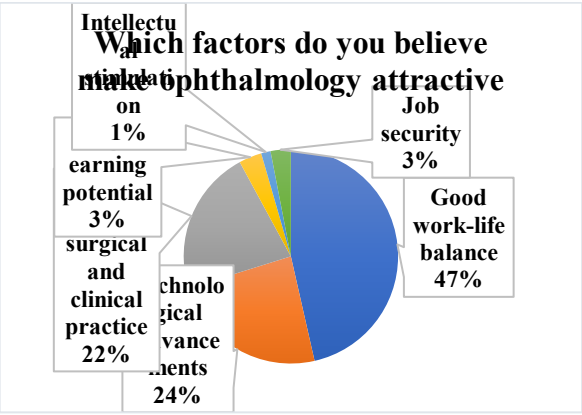
Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(2), 3001-3011 | ISSN:2251-6727

Table 2b. What makes ophthalmology appealing in your opinion?

Factor	Frequency (n)	Percentage (%)
Good work-life balance	380	84.50
Technological advancements	194	43.17
Opportunity for surgical and clinical practice	179	39.85
High earning potential	28	6.27
Intellectual stimulation	12	2.58
Job security	25	5.54



The strongest attribute was work-life balance- 84.5%, next was technology- 43.17%, surgery-clinic blend- 39.85%. The lowest percentages were for money earning or money making (8.57%) and intellectual challenge (7.46%).

Table 3: Factors Influencing Specialty Choice (Based on Ratings)

Variables	Mean	Standard Deviation
Work-life balance	3.62	0.91
Financial rewards	4.12	0.72
Prestige of the specialty	3.46	0.68
Interest in surgical procedures	3.56	0.91
Research opportunities	3.12	0.72
Training duration	3.32	0.65
Competition for residency positions	3.3	0.65
	Frequency (n)	**Percentage (%)**
How would you describe your decision-making process in selecting a specialty?		
Already decided	19	4.15
Narrowing down	324	72.02
Open to options	91	20.21
Undecided	0	0
Completely Undecided	16	3.63
Do you feel pressured by peers, faculty, or family to choose a particular specialty?		
Strong Pressure	63	13.99
Some Pressure	268	59.59
No Pressure	119	26.42

Table 3 provides a summary of the reasons and influences on study participants.

The two most important factors influencing specialty choice were financial reward (mean = 4.12, SD = 0.72) and work-life balance (mean = 3.62). A majority of the participants were presently uncertain about their speciality (72.02%), and a significant number were under peer or faculty pressure (73.58 %). Without a doubt, the

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www.jchr.org
JCHR (2026) 16(2), 3001-3011 | ISSN:2251-6727

prestige and appeal of surgery ranked as second-tier factors.

Table 4: Exposure and Future Considerations

Variables	Frequency (n)	Percentage (%)
Would you consider an ophthalmology elective or internship to explore the field further?		
No	126	27.98
Yes	112	24.87
May be	212	47.15
How do you perceive the future of ophthalmology in terms of career opportunities?		
Expanding	100	22.28
Stable	280	62.18
Declining	49	10.88
Not Sure	21	4.66
Do you think technological advancements (e.g., AI, laser surgery) make ophthalmology more appealing?		
No	12	2.59
Yes	137	30.57
May be	301	66.84
Would financial incentives (e.g., scholarships, reduced tuition for ophthalmology training) encourage you to consider ophthalmology?		
No	352	78.24
Yes	44	9.84
May be	54	11.92
When do you plan to make a final decision about your specialty?		
Before Clinical	2	0.52
During Clinical	100	22.28
After Internship	0	0
Not Sure	347	77.2
How confident are you in your current specialty choice?		
Very Confident	19	4.15
Somewhat	100	22.28
Neutral	203	45.08
Not Confident	128	28.5
When do you plan to make a final decision about your specialty?		
Before Clinical	2	0.52
During Clinical	100	22.28
After Internship	0	0
Not Sure	347	77.2
How confident are you in your current specialty choice?		
Very Confident	.19	4.15
Somewhat	100	22.28
Neutral	87	45.08
Not Confident	55	28.5

A different study revealed that only 24.87% wish to definitely pursue ophthalmology electives. Also, technological innovations interest them in this specialty as declared by 66.84% respondents. On the contrary, 78.24% respondents stated that monetary incentives

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JCHR (2026) 16(2), 3001-3011 | ISSN:2251-6727

didn't influence their decisions. A majority of the respondents (77.2%) were uncertain when they would finalize their specialty.

Discussion:

The goal of the current study was to find ophthalmology's perception as a future career choice among medical students as well as its facilitators and barriers. Despite the fact that students are increasingly exposed to ophthalmology as part of their medical training, the proportion of students selecting it as a final specialty preference remains low. In the present study only 20 (3.11%) students reported a high probability or confirm choice of ophthalmology as a future career choice. The world is facing an increasing gap between the need-and-availability of trained ophthalmologists. Resnikoff et al, in their review of the data on worldwide ophthalmic manpower, have shown that there is a global shortage of ophthalmologists.

Most ophthalmologists (84.5%) believed they enjoyed a good work and leisure life because of ophthalmology. Nonetheless, financial problems remained at the forefront, with 74.61% praying the specialty is less lucrative. According to Newton et al. findings, similar trends reflect North American attitudes as the authors performed focus groups in the U.S. with lifestyle and income affecting specialty choice(13). Lind and others also noted that academic interest is no longer considered the main factor behind current specialty choices.

Although 39.9% of them reported increased interest in ophthalmology during their medical school years, very few had career intent. In a study involving Saudi cohorts, Abdulghani et al. reported that despite a good impression of the specialty, cumbersome lack of departmental mentorship and limited elective exposure were important factors which deter the actioning of career intent in ophthalmology (15). The results of Al-Barry et al. show that structured mentorship at the institutional level was associated with an increased selection of ophthalmology (16).

In our study, 64.77% reported a perceived competitiveness (i.e., difficulty of ophthalmology), as being the most common barrier. A similar study among Indian Medical Interns documented that, due to fewer PG seats and fear of performance of surgical procedure limiting preference for the specialty, ophthalmology is a difficult choice (17). A multicenter research conducted by Khamees et al. revealed that limited exposure of under-graduate students to procedural skills reduces confidence in choosing surgical subspecialties.

As per our study 54.92% students said that college did not provide them enough exposure to ophthalmology. An Indian study by Chawla et al. indicated that minimal exposure and lack of structured rotations and patient contact decreased medical students' interest in a specialty (19). According to a study conducted by Divya et al., more importance of skill-based teaching from an institution requires enhancement of ophthalmology teaching in the undergraduate setup.

A good percent i.e. 62.18% believed it would ensure a stable career but only 24.87% were willing to opt for electives in ophthalmology. According to Madani et al., students from the Middle East demonstrated a similar unawareness, with the number only increasing through official compulsion and faculty engagement (21).

The choice of specialty is influenced by gender dynamics. Both boys and girls participated equally in our study; however, confidence towards a specialty was least regarding selection of ophthalmology by the girl students. The study by Kaliyadan et al. showed the gendered expectations and underestimation of surgical ability by female students to be statistically significant (22). In their study from Madinah, Aljuhani et al. also found similar results for social acceptability and academics.

Thus, lack of undergraduate institutional exposure (which sums to inadequate exposure to ophthalmology in medical institutions for undergraduates) causes reluctance in the further choice of ophthalmology as a specialty. In the Brazilian context, Gameiro et al. found that the younger generations consider ophthalmology as a specialty that fulfills the desire for innovation and has a technological appeal, but the absence of structured institutional exposure limited specialty uptake (24).

Conclusion

This study highlights that while medical students acknowledge the favorable lifestyle and technological advancements associated with ophthalmology, a combination of limited institutional exposure, perceived competitiveness, and concerns about financial rewards deters their active consideration as a career. Structured

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JCHR (2026) 16(2), 3001-3011 | ISSN:2251-6727

mentorship, early clinical engagement, and targeted curricular reforms are essential to bridge this interest–intent gap. Addressing gender-specific barriers and promoting the evolving role of ophthalmology in digital and surgical innovation may further enhance its appeal to future medical professionals.

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