

Multicentric Medical Student Profile and Their Perspectives About Ophthalmology Education

Perfil Multicêntrico do Acadêmico de Medicina e suas Perspectivas sobre o Ensino da Oftalmologia

Mariana de Almeida Ferreira¹ <https://orcid.org/0000-0003-3291-5021>
Gustavo Rosa Gameiro² <https://orcid.org/0000-0002-0400-8013>
Frederico de Miranda Cordeiro³ <https://orcid.org/0000-0002-2779-3798>
Thiago Viana Santos⁴ <https://orcid.org/0000-0002-8878-6719>
Ana Aurea Vilas Boas Pombo Hilarião⁵ <https://orcid.org/0000-0002-8878-1061>
Guilherme Macedo Souza⁶ <https://orcid.org/0000-0002-3045-1297>
João Jorge Nassaralla Neto⁷ <https://orcid.org/0000-0002-8274-5051>
Pedro Carlos Carricondo² <https://orcid.org/0000-0002-2916-205X>
Arlindo José Freire Portes¹ <https://orcid.org/0000-0001-5530-1837>
André Luís Freire Portes¹ <https://orcid.org/0000-0002-5440-5092>

ABSTRACT

Purpose: To analyze quantitative and qualitative data about the profile of the Medical student who attended the Ophthalmology discipline, correlating aspects of the basic knowledge and the student perspectives on his training. **Methods:** An observational cross-sectional survey study was performed in 242 students over 12 Brazilian states. The project was done by Associação Brasileira de Ligas Acadêmicas de Oftalmologia (ABLAO) with the participation of the associated Academic Leagues of Ophthalmology. The sample was composed by random undergraduate medical students, who have already had Ophthalmology as subject. An individual questionnaire was used with questions about the student profile, basic knowledge of the speciality and perspectives about their teaching. Descriptive statistical analysis was performed with the Statistical Package for Social Sciences SPSS program, measuring mean, standard deviation and 95% confidence intervals. **Results:** The mean age was 23.96 (3.36±) years and female students were predominant in 63.6%. 42% of the states from all regions of Brazil participated. 71.9% of the students were from private educational institutions and were in the 8th period (±1,97). 43% were a member of the Academic League of Ophthalmology in the origin institution. Basic knowledge questions had a variation of the correct answers. Despite of only 31% of the students feel safe to attend or refer patients for evaluation of the specialist, 95.9% of the students answered that they consider ophthalmology important in their training as general practitioner. **Conclusion:** We defined in this research a profile for the undergraduate student who attended the Ophthalmology Department. We verify how the student considers eye health important and how they search for more knowledge in his preparation in general. We also found that the Medical Academic Leagues make up the main extracurricular support for their learning. It is important to discuss and implement different teaching strategies to improve their training.

Keywords: Tutorship; Education; Graduation; Medicine; Ophthalmology; Leagues

¹ Universidade Estácio de Sá, Rio de Janeiro, RJ, Brazil.

² Universidade São Paulo - SP, Brazil.

³ Faculdade de Ciências Médicas de Minas Gerais, Belo Horizonte, MG, Brazil.

⁴ Faculdade de Medicina de Campos, Rio de Janeiro, RJ, Brazil.

⁵ Escola Bahiana de Medicina e Saúde Pública, Salvador, BA, Brazil.

⁶ Faculdade de Medicina, Universidade Federal da Bahia, Salvador, BA, Brazil.

⁷ Universidade Federal de Goiás, Goiânia, GO, Brazil.

The authors declare no conflicts of interests.

Received for publication 03/06/2019 - Accepted for publication 22/08/2019.

RESUMO

Objetivo: Analisar qualitativa e quantitativamente o perfil do aluno de Medicina que cursou a disciplina de Oftalmologia, correlacionando aspectos do seu ensino em conhecimentos básicos e perspectivas discente sobre a sua formação. **Métodos:** Foi realizado um estudo transversal descritivo do tipo inquérito, em 242 alunos de 12 estados brasileiros. A execução do projeto foi feita com a participação das Ligas Acadêmicas de Oftalmologia de Instituições de Ensino Superior vinculadas a Associação Brasileira de Ligas Acadêmicas de Oftalmologia (ABLAO). A amostra foi composta por alunos da graduação do curso de Medicina, escolhidos aleatoriamente, que já cursaram uma disciplina referente a Oftalmologia. Foi utilizado um questionário individual com perguntas sobre o perfil do aluno, conhecimentos básicos da especialidade e perspectivas sobre o seu ensino. A análise estatística foi feita com o programa Statistical Package for the Social Sciences SPSS, de forma descritiva, com média, desvio padrão e intervalo de confiança de 95%. **Resultados:** A média de idade foi de 23,96 (3,36±) anos de idade, e o sexo feminino foi predominante em 63,6%. Participaram 42% dos estados de todas as regiões do Brasil nessa pesquisa. 71,9% dos alunos eram de instituições privadas de ensino e estavam cursando o 8º período (±1,97). 43% faziam parte de Liga Acadêmica de Oftalmologia. Observou-se variação de acertos nas questões de conhecimentos básicos, e ao final 95,9% dos alunos responderam que consideram a Oftalmologia importante na sua formação como médico geral, entretanto apenas 31% se sentem seguros em atender e ou encaminhar pacientes para avaliação do especialista. **Conclusão:** Definimos nessa pesquisa um perfil para o aluno de graduação que cursou a Disciplina de Oftalmologia. Verificamos o quanto ele considera importante a saúde ocular, e que existe uma procura por mais conhecimento no seu preparo como médico generalista. Constatamos também que as Ligas Acadêmicas de Medicina compõem o principal apoio extracurricular ao seu aprendizado. Consideramos importante que diferentes estratégias de ensino sejam discutidas e implementadas para melhora na sua formação.

Descritores: Ensino; Educação; Graduação; Medicina; Oftalmologia; Ligas

INTRODUCTION

According to information from the World Health Organization (WHO), blindness is considered one of the most costly of all disabilities. Ophthalmological appointments represent 9% of appointments, and 5% of general medical emergencies.^(1,2)

It is essential that the teaching of ophthalmology in graduation courses enables the student and consequently the future doctor to diagnose and treat eye diseases in primary care.⁽³⁾

Some studies reveal that the initial treatment of ophthalmic complaints is usually made by general practitioners, many of them having just graduated. These studies aimed at analyzing the degree of basic knowledge in ophthalmology of general practitioners and medicine students, showing a learning deficit during medical education.^(4,6)

Despite the existence of national guidelines for the medical education curriculum, there is a difference between the various institutions. Ophthalmology and several other medical sciences are inserted in this context, since well-organized and structured courses can be offered throughout the national territory, as well as unsatisfactory in academic teaching.⁽⁷⁻⁹⁾

The national literature has limited information on the characteristics of ophthalmic teaching during the doctor's graduation. There are works evaluating the quality of education, but they are restricted to a few states and educational institutions. It is known that there are flaws in training, and these imply unprepared professionals.⁽⁴⁾

The ABLAO (Associação Brasileira de Ligas Acadêmicas de Oftalmologia) was created in July 2013 to promote the political, scientific and social integration of students interested in Ophthalmology, and is the main tool for the development of this study. ABLAO currently has approximately 55 associated Ophthalmology academic leagues, and is present in all regions of Brazil, representing an important student body.

In this first scientific work of national scope of ABLAO, we aimed to analyze qualitatively and quantitatively the profile of the medicine student who attended the discipline of Ophthalmology, correlating the aspects of its teaching during graduation.

METHODS

A descriptive cross-sectional survey was carried out with the participation of the Academic Ophthalmology Leagues and Higher Education Institutions linked to ABLAO. The sample comprised randomly selected undergraduate medicine students who have already taken a course in Ophthalmology.


The research was carried out with an individual, standardized questionnaire without the identification of the participant and directed to the student body of medical education institutions in different regions of Brazil. The questions were divided in 3 steps: student profile, basic knowledge of the specialty, and perspectives on their learning. Students were asked to voluntarily answer the questionnaire (Figure 1) at no financial cost by signing the informed consent form (ICF). The project was previously submitted and approved by the Research Ethics Committee of the School of Medicine at Universidade Estácio de Sá.

Students under 18 years of age who did not answer all questions or refused to sign the ICF were excluded from the study.

The study variables were both qualitative and quantitative, and the main ones to be analyzed included the location of the research, the period the student is attending, participation in the Ophthalmology academic league, and interest in working with the specialty. We also asked basic questions about some common eye diseases, and whether learning provides confidence for working as a doctor. The statistical analysis was performed using the Statistical Package for Social Sciences SPSS program in a descriptive way, with mean, standard deviation, and 95% confidence interval.

RESULTS

Information was obtained from 242 students from 12 states of all regions of Brazil. Regarding the student profile (Table 1), the average age was 23 (3.36) years old, and females were predominant in 63.6%. 42% of the Brazilian States were present in this survey, especially the states of Ceará, Minas Gerais and Rio Grande do Sul, which accounted for 54.08% of the total. The vast majority of 71.9% students who answered the survey were from Private Teaching Institution, and were



Dear student,

This questionnaire is part of a multicenter research on the teaching of Ophthalmology in medicine schools in Brazil from the perspective of students. Your answers are very important for the growth and development of this work. You will not be identified at any time. We thank you in advance for your cooperation, and ask sincerity in the answers.


ABLAO - Management 2016/2017

1. STUDENT PROFILE

Name (initials): _____ Age: _____ Gender: () F () M
 City of the educational institution? _____ State: _____
 Current period: _____ The educational institution is: () Public () Private
 Do you want to specialize in ophthalmology? () Yes () No
 If so, what was the biggest influence on this decision?
 I have ophthalmologists in the family.
 It is a specialty with good financial earnings.
 Because it has a good quality of life.
 Because it is a very complete specialty (surgery, clinical practice, and complementary exams)
 Because I like it.
 Were you or are you part of any ophthalmology league? () Yes () No

2. BASIC KNOWLEDGE

1- What is the ametropia present when light rays focus on two distinct points of the retina?
 Myopia
 Hyperopia
 PResbyopia
 Astigmatism
 Did you feel comfortable and safe answering the question above?
 100% () 80% () 60% () 40% () 20% () 0%

2- Regarding the figure below, identify the macula (MA) and the optical disc (OD).

 Did you feel comfortable and safe answering this question?
 100% () 80% () 60% () 40% () 20% () 0%

3- Glaucoma is a disease characterized by increased intraocular pressure.
 () Correct () Incorrect.
 Did you feel comfortable and safe answering the question above?
 100% () 80% () 60% () 40% () 20% () 0%

4- A teenager was admitted to the emergency room of his hometown hospital with an acute condition of redness in the right eye, a feeling of sand, and a purulent secretion. He reported that upon awakening his eyelids were sticking together, and it was difficult to open them. Check the correct option for the case:
 It is a viral conjunctivitis whose spontaneous resolution usually occurs within 2-3 weeks.
 The case is about allergic conjunctivitis caused by a conjunctival reaction to the environmental allergen.
 It is a bacterial conjunctivitis. Although 60% of cases resolve within 5 days without treatment, topical antibiotics may be used to accelerate recovery.
 Did you feel comfortable and safe answering the question above?
 100% () 80% () 60% () 40% () 20% () 0%

5- Which of the options below does not present red eye:
 Anterior uveitis () Conjunctivitis () Retinal detachment () Acute glaucoma
 Did you feel comfortable and safe answering the question above?
 100% () 80% () 60% () 40% () 20% () 0%

3. PERSPECTIVES OF MEDICAL EDUCATION

When is the ophthalmology course taught at your educational institution? _____
 What is the workload of this subject in your educational institution? _____
(Describe the number of days per week, how long, workload)
 Do you consider the teaching of ophthalmology important for the training of the general practitioner? () YES () NO
 Does your university have a medical internship in ophthalmology? () Yes, mandatory () Yes, optional () No
 Does your school have other complementary ophthalmology activities? **(You may check more than one option)**
 Monitoring () Academic League () Extension Course () Undergraduate research () Nothing.
 About the affirmations in the first column of the table, tick the corresponding one in the table:
 A) I was taught and learned the following subjects

	100-80%	80-60%	60-40%	40-20%	<20%
Ocular anatomophysiology					
Eye fundus					
Acute visual loss					
Chronic visual loss					
Red Eye Syndrome					
Diabetic Retinopathy					
Hypertensive Retinopathy					
Age-Related Macular Degeneration					
fractionRe					

B) According to the question above, do you consider yourself prepared about how and when to refer the patient to the ophthalmologist?
 Yes, I am sure, I know what I can guide and what I should refer and the right way
 Yes, but I will refer practically all eye disorders
 I'm not sure what to do, but when in doubt I refer
 I'm not sure what to do, and I will not refer anyone

Figure 1: Questionnaire applied to research involving information on the student profile, basic theoretical knowledge, and perspectives of medical education.

attending the 8th semester (1.97). Forty-three percent (43%) of students who participated in the survey were part of some Ophthalmology Academic League, but only 22.3% of the total students in the study said they intended to pursue an ophthalmologist career at that time.

Regarding basic knowledge (Table 2), 83% of students got right what astigmatism is, 80% bacterial conjunctivitis, and 68.6% the question about red eye. However, 42.9% had difficulty identifying the optic disc and/or macula, and the rate of correct answer for the glaucoma question was 40.8%. The students' maximum confidence in answering the questions asked was only 53.3%, while the highest percentage of lower confidence was 9.9%.

The third part of the questionnaire included questions about the perspectives of Ophthalmology teaching from student opinion (Table 3); 48.3% of the institutions teach the discipline of Ophthalmology in the 7th semester. Extracurricular options related to the teaching and practice of Ophthalmology were also researched, and it was found that 43.4% of students answered that their Medicine Course offered elective internship in Ophthalmology, 93% League of Ophthalmology, 16.9% Monitoring and 24.4% Undergraduate research.

At the end of the analysis, 95.9% of students answered that they consider Ophthalmology important in their training as general practitioners. However, only 31% feel safe to attend and/or refer patients for evaluation of the specialist with their academic training.

Table 1
Student profile

Age	23 (\pm 3,36)
Sex	63.6% feminino
Educational institution	71.9% privada
Semester you are attending	8th (\pm 1.97) semester
Participates in ophthalmology academic league	43%
Intends to study Ophthalmology	22.3%
Influence on the choice of specialty	62.8% because it involves surgery, clinic and complementary exams

Table 2
Basic principles

Themes	Percentage of Correct Answers%	100% Certain to answer %	No certainty%
REFRACTION	83.1	35.1	9.9
GLAUCOMA	40.9	53.3	1.7
RETINA	57.3	37.6	9.9
EXTERNAL DISEASES	80.6	29.8	4.5
RED EYE	68.6	26.4	9.5

Table 3
Perspective of ophthalmology teaching

Semester of the Ophthalmology Discipline	7 ^o (\pm 1.08) semester
Elective Internship	43.4
Undergraduate Research	24.4
Monitoring	16.9
Academic League	93
Importance in General Practitioner Training	95.9
Safety to Guide and Refer the Patient	31

Results expressed in percentages

DISCUSSION

The poor training of the general practitioner in ophthalmic knowledge is a recurrent situation described in the literature. (5-7 It is worrying when in previous research it is observed that the undergraduate students' ophthalmic knowledge is insufficient.(7) Some articles showed that 70% of students did not know the basic concepts about optical correction, and 88% about ocular foreign body.(6,7) Following the same line of questions, we observed that approximately half of the students

had difficulty identifying both the macula and the optic disc, and could not correctly describe glaucoma. The lack of content in their learning reflects the uncertainty of approximately 90% of students and newly-graduated doctors in their care.(4,5,10) In our survey, only 31% feel confident about treating and/or referring patients to specialist evaluation with their academic background. Medical education and the search for ways to improve it shall be debated regularly, because the combination of uncertainty and low scientific knowledge can seriously damage the patients' health.

In the present scientific work, we have gathered one of the largest and most recent statistics study on the subject. There were 242 questionnaires in 12 Brazilian states. Such amplitude was only possible due to the direct involvement of ABLAO. The Academic Leagues of Medicine, in addition to participating in the academic complementary process of student training with courses and theoretical-practical activities, help in health prevention projects, also considering at that time the scientific role, preparing and carrying out under the coordination of this article. The participation of medicine students from all regions of Brazil was only achieved in this project through ABLAO, which is also established as an important tool for academic digital communication.

The students' profile regarding age and gender in this research is similar to the others seen in the literature,⁽⁶⁾ and we found that the discipline of Ophthalmology is generally (48%) taught in the 7th semester of the curriculum. In addition to enabling the diagnosis and treatment of some eye diseases in a first appointment, the educational process in this moment of training of the doctor consists in making the appropriate referral to the specialist.⁽³⁾ The student should also be given a broader view of the patient, an integration with other disciplines of the medical education program, as the eye symptom is commonly associated with other systemic diseases, and the student's preparation for diagnosis and association is required, dealing with the patient in its entirety, and not isolated within a specialty. This is a very important context as it is impossible to separate eye health care from medical education.

Another relevant point that draws attention in this research is the fact that 43% of students are part of the institution's ophthalmology league, but do not plan at this time to have a career as a specialist. We may question that the desire to participate in academic leagues goes beyond the student's interest in becoming a specialist, but rather as a way to learn more about the subject by complementing their extracurricular training due to considering the discipline important. This can be confirmed by our study, where 95.9% of students responded that they considered ophthalmology important in their training as general practitioners.

Other extracurricular learning options such as monitoring, undergraduate research, and elective internship focused on ophthalmology are also found, but to a lesser extent. However, they do not reduce their importance in learning, as they contribute independently and within their specific objectives in complementing the student's education.

CONCLUSION

In the present research, we defined a profile for the undergraduate student who attended the Discipline of Ophthalmology. We see how important they consider eye health, and that there is a demand for more knowledge in their training as general practitioners. We also found that the Medicine Academic Leagues comprise the main extracurricular support for their learning. We consider it important that different teaching strategies are discussed, elaborated and implemented to improve their education.

ACKNOWLEDGEMENTS

Special thanks to the ophthalmology academic leagues involved in this ABLAO project and all their boards: Academic

League of Ophthalmology of Bahia (Ana Áurea Vilas Boas Pombo Hilarião and Guilherme Macedo de Souza), Academic League of Ophthalmology of Universidade Federal de Juiz de Fora (Evelyn Alvernaz Figueiredo), Academic League of Ophthalmology of Universidade de Passo Fundo (Mônica Manica), Academic League of Ophthalmology of Universidade Estadual de Londrina (Giovana Rosa Gameiro), League of Ophthalmology of Universidade Federal de Goiás (João Jorge Nassaralla Neto), League of Ophthalmology of Estácio de Sá (Gabriel Lima Benchimol and Mariama de Almeida Ferreira), Academic League of Ophthalmology of Paraíba (Victor Hugo Rabello Emery), Academic League of Ophthalmology do Cariri (Jaíne Dantas Peixoto), League of Ophthalmology of Universidade Católica de Brasília (Lucas Figueiredo Lacerda), Academic League of Ophthalmology of Universidade de Passo Fundo (Gabriel Mello Mattos Terra), League of Ophthalmology Araguainense (Maria Antonia Pinto de Andrade), Academic League of Ophthalmology of School of Medicine of Alfenas (Luiz Henrique Torres Cota), Academic League of Ophthalmology of School of Medicine of Petrópolis (Fernando Renato Praes Calixto), Academic League of Ophthalmology of Universidade Anhembi Morumbi (Caroline Soares Pinto), League of Ophthalmology of Universidade Federal do Ceará (Francisco Victor Carvalho Barroso), Academic League of Ophthalmology of Universidade Tiradentes (Mateus Nogueira Moura), Academic League of Ophthalmology Centro Universitário de Belo Horizonte (Tábata Marques Gontijo), League of Ophthalmology of Universidade Federal de Ciências da Saúde de Porto Alegre (Pedro Kern Menna Barreto), Academic League of Ophthalmology of Faculdade Ciências Médicas de Minas Gerais (Larissa Lima Magalhães), Academic League of Vision Health of Universidade Nove de Julho (Anna Carolina Macieira Feitosa Mota), Liga de Prevenção à Cegueira da Universidade de São Paulo (Gustavo Rosa Gameiro), Academic League of Ophthalmology of School of Medicine of Campos (Thiago Viana Santos), Academic League of Ophthalmology and Blindness Prevention of Universidade Cidade de São (Daniela Trovão de Figueirôa), Academic League of Ophthalmology of Universidade Federal do Mato Grosso/Sinop (Aline Hildebrand Torres).

REFERENCES

1. Organização Mundial de la Salud. Prevencion de la cegueira informe de un grupo de estudio de la OMS. Geneva: OMS; 1972. p. 7-21.
2. Avila M, Alvaes MR, Nishi M. As condições de saúde Ocular no Brasil [Internet]. São Paulo: Conselho Brasileiro de Oftalmologia; 2015. [citado 2019 Ago 14]. Disponível em: http://www.cbo.net.br/novo/publicacoes/Condicoes_saude_ocular_IV.pdf
3. Silva MR; Silva Maria Rosa Bet de Moraes. O Ensino da Oftalmologia. Rev Bras Oftalmol. 2009;68(3):127-8.
4. Espindola RC, Teixeira FC, Yamaki IM, Silva HR. Freitas. Análise dos conhecimentos básicos sobre urgência em plantonistas não oftalmologistas. Arq Bras Oftalmol. 2006;69(1):11-5.
5. Lopes Filho JB, Leite RA, Leite DA, Castro AR, Andrade LS; FILHO JBL. Leite RA, Leite DA, Castro AR, Andrade LS. Avaliação dos conhecimentos oftalmológicos básicos em estudantes de Medicina da Universidade Federal do Piauí. Rev Bras Oftalmol. 2011;70(1):27-31.

6. Rached CR, Oliveira TC, Sousa CL, Escudeiro IM, Mori LP, Ferreira FP, et al. Avaliação do conhecimento sobre urgências oftalmológicas dos acadêmicos da Faculdade de Medicina da Pontifícia Universidade Católica de Campinas. *Rev Bras Oftalmol.* 2012;71(2):100-5.
7. Ginguerra MA, Ungaro ABS, Villela FF, Kara-josé AC, Kará-José N. Aspectos do ensino de graduação em oftalmologia. *Arq Bras Oftalmol.* 1998;61(5):546-50.
8. Kara José AC, Passos LB, Kara José FC, Kara José N; KARA JOSE AC. Passos LB, Kara José FC, Kara-josé N. Ensino extracurricular em Oftalmologia: grupos de estudos / ligas de alunos de graduação. *Rev Bras Educ Med.* 2007;31(2):166-72.
9. Pacha PM. A inserção da oftalmologia em escolas médicas brasileiras com currículos disciplinares e não disciplinares. 2005. 137f. [Dissertação]. São Paulo: Universidade Federal de São Paulo; 2005.
10. Shuttleworth GN, Marsh GW. How effective is undergraduate and postgraduate teaching in ophthalmology? *Eye (Lond).* 1997;11(Pt 5):744-50.

Corresponding author:

André Luís Freire Portes
Av. Nossa Senhora de Copacabana, 195/409 – Rio de Janeiro,
RJ, Brazil.
ZIP Code: 22020-002.
E-mail: alfp80@hotmailcom