

Which is the best method to learn ophthalmology? Resident doctors' perspective of ophthalmology training

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The study aimed to gauge ophthalmology resident doctors' perception of their teaching programs and various methods used in it and to formulate a well structured program for teaching ophthalmology. Closed ended and open-ended questionnaires were used for survey of ophthalmology residents in West Maharashtra, India. Sixty-seven out of 69 residents of seven residency programs completed the questionnaire. On a scale of 0 (most unsatisfactory) to 4 (best), lectures with power point presentation had a median score of 4, didactic lectures 2, seminar 3, case presentation 4, wet lab 3 and journal club 3. There was a discrepancy in the actual number of surgeries performed by the resident doctors and their perception of the number needed to master those surgeries. Phacoemulsification and non-cataract surgery training was neglected in most programs. The residents wanted to be evaluated regularly and taught basic ophthalmic examination, use of equipments and procedures in greater depth.

Key words: Human resource development, medical education, methods of teaching, ophthalmic residency, students' perspectives

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The mode and content of teaching has been a matter of debate amongst teachers, trainers and gurus since antiquity. Acquisition of necessary skills and knowledge is the prerequisite in practicing any demanding profession like that of medicine. But trainers tend to focus on the knowledge given rather than the skills and knowledge retained by the trainee (the desired outcome). The postgraduate medical education in India follows an apprenticeship training approach rather than the appraisal approach common in developed countries.¹ A survey of specialty training in ophthalmology in India in 2002 had shown its strengths and weaknesses.² But it was directed to the heads of the ophthalmology department. The trainees' perspective was rarely taken into account in designing a structured teaching program. The study aimed to get a feedback of ophthalmology residents about the various teaching methods employed in order to develop an ideal residency training program.

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Materials and Methods

A questionnaire cum feedback form was circulated to ophthalmology residents in West Maharashtra (Appendix 1). It had questions with rating scales about various methods of teaching. Students were asked to gauge didactic lectures, lectures with power point presentations, seminars, journal club, case presentations, and wet lab on a scale of 0 (most unsatisfactory) to 4 (best). They were asked how many surgeries they had seen, how many they needed to assist and to perform to be considered confident and trained in that technique. This was followed by how many they had actually performed. There were open-ended questions regarding the library facilities, teaching basic techniques of examination of patient, outreach camps, eye banking, wet laboratory and other diagnostic aids. The form was developed at the community eye care department of the hospital and piloted on the residents of the same institute. It was administered to the resident doctors by giving it to them and asking for the completed form after three days. If they had not filled it, the request was repeated after a week. The request was made through a social worker or a fellow resident, but was not directed through the department head or the postgraduate teacher. The residents were free not to put their name at the end, but had to fill in details of age, sex and number of years of residency completed.

Results

Sixty-nine ophthalmology residents in seven residency programs were contacted. All except two responded. Non-responders did not give any reason. Twenty-seven out of 67 (40.3%) were males. The sex ratio was almost the same in all the programs. The average age was 25 years (range 22-34 years, 95% CI 21 to 29). The minimum number of residents in a program was three, and the maximum 18. The distribution of residency programs was government medical college (one), private medical college (two) tertiary private general hospital (one) and eye hospitals (three), two of them being community eye care centers.

The residents graded lectures with power point presentations (on a scale of 0 to 4) with median as 4 and didactic lectures (without power point) with median as 2. Thirty-eight out of 67 (56.7%) gave the maximum 4 points to power point presentation lecture, while only 4/67 (6%) gave it for the didactic lecture. The median of seminar, case presentation with discussion, wet lab and journal club was 3, 4, 3 and 3 respectively. Twenty-seven out of 67 (40.3%) gave full marks to the seminar. Fifty-seven out of 67 (85.1%) gave the maximum points (4) for case presentation. Twenty out of 67 were unaware of wet lab facilities, but 29/47 (61.7%) who were aware of it gave full marks to wet lab. Twelve (17.1%) were unaware about the journal club and three institutions did not have it as a method of teaching. Twenty-seven of the 55 were aware of it (49.1%), gave the maximum points (4) to a journal club.

All (67/67) residents were in favor of regular objectively structured clinical examination (OSCE) tests or viva voce examination. Thirty-eight out of 67 wanted to be tested every six months, 10/67 monthly, while 4 /67 were for weekly assessments.

All attested to the need to have better library facilities. Only three institutions (all eye hospitals) had more than 100 books

Table 1: Resident doctors' report of surgeries seen, needed to assist, needed to perform and the number of surgeries actually done (median, range) for 2nd and 3rd year residents (47/67) during their residency tenure

Type of surgery	Seen	Ideally should assist	Ideally should perform	Actually done so far
ECCE + IOL	20 (10-300)	20 (10-500)	50 (27-300)	17 (0-500)
Manual SICS	25 (18-200)	20 (15-400)	75 (10-1000)	2 (0-2000)
Phacoemulsification	30 (8-300)	35 (10-400)	50 (20-400)	0 (0-500)
Pterygium excision	10 (0-50)	10 (0-200)	25 (20-150)	0 (0-235)
Dacryocystectomy	10 (0-50)	6 (2-50)	20 (5-50)	1 (0-110)
Dacryocystorhinostomy	10 (0-50)	10 (5-40)	20 (5-60)	0 (0-28)
Squint correction	20 (0-50)	15 (3-60)	20 (10-100)	0 (0-12)
Ptosis correction	10 (0-50)	10 (5-50)	15 (5-70)	0 (0-5)
Entropion/Ectropion correction	10 (0-50)	15 (5-50)	15 (5-100)	0 (0-3)
Trabeculectomy	2 (0-10)	15 (5-10)	20 (5-50)	0 (0-2)

As there are outlier values, median instead of mean, has been used as the measure of central tendency. ECCE- extra capsular cataract extraction, IOL- intraocular lens, SICS- small incision cataract surgery

on ophthalmology in their library. All had internet facilities but 42/67 (61.2%) of students complained of lack of access to it. Residents also desired to be taught separately to handle perimetry, B-Scan, Neodymium Yttrium Argon Garnet (Nd: YAG) laser and ultrasonic biomicroscopy. Twenty-one out of 67 also wanted training to handle outreach camps. Only one institution had formal training to attend eye donation calls. Thirty-two out of 67 wanted to learn more about eye donation and enucleation.

The surgeries observed and those actually performed by the resident doctors are shown in Table 1 along with the number they perceived they ought to assist and independently perform to gain mastery in it. The figures are of surgeries performed by second- and third-year residents only during their residency tenure. Most students wanted basic ophthalmology and refraction to be taught more with emphasis on squint and neuro-ophthalmology. They wanted more hands-on experience in using basic diagnostic aids like 90D, 78D, indirect ophthalmoscope, gonioscopy, applanation tonometry and perimetry.

Discussion

The case presentation in which a resident doctor presented a patient history and examination before a professor or a tutor in the presence of other residents was the most popular form of teaching for the trainees. The discussion regarding lacuna in history-taking, examination and possible investigations and management that followed the presentation was considered most rewarding. The resident doctors were not enamored by didactic lectures which are common in most medical schools, especially for undergraduates and they need to be supplemented with more audio-visual aids. The 'seminar' in which one or more resident doctors made audiovisual presentations about a certain topic, with a tutor as facilitator, was popular. An Indian study reported that almost one-third of the institutions had a wet lab facility.²

The 'journal club' in which a resident doctor summarized or read an article from a peer-reviewed journal in presence of a tutor and other residents was graded an average of 3.14. A structured journal club was found to be a useful tool for

practice-based learning in the US.³ An Indian study showed that only 51/128 (41.4%) institutions subscribed to more than two international journals.²

An Austrian study showed three-dimensional animated teaching to be a useful adjunct to surgical videos, especially for female medical students.⁴ Virtual reality training as used by trainee pilots has been proposed as a method to teach surgical competence in the US.⁵ A three-dimensional computer animation technology was shown to significantly increase the quality and efficiency of education and demonstration of complex topics in ophthalmology in Austria.⁶ But only three eye hospitals in our study had video libraries.

Though all the institutions had internet access, the majority of the students (42/67, 61.2%) in all except two institutions complained about lack of adequate access. Erratic connections, limited library hours and restrictions on trainee doctors using the web were cited as reasons for lack of access. As more and more information is available on the internet, this seems paradoxical and unfortunate. None of the teaching programs had structured curriculum for basic skills like history-taking and ocular examination. The case presentation was the only method of teaching to address this. These skills were supposed to have been learnt by experience and under supervision. But a US study had reported worrisome erosion of acquired skills of eye examination amongst their students'.⁷

There is a huge variation in the actual number of surgeries performed [Table 1]. But the variation is still large even after allowing for the exceptions. A study in 2002 had shown that an average surgery per trainee in an institution per year was 111 cataract surgeries, 4.8 glaucoma surgeries, 2.2 squint surgeries, 4 lid surgeries, 2.2 keratoplasty and 0.8 dacryocystorhinostomy surgeries.² Even though there seems to be an adequate number of surgeries being performed annually per student in an institution, the large range and median of zero for most surgery types denotes the enormous difference between various institutions. And the resident doctors' perceptions differ significantly from what was reported by the heads of ophthalmology. Half the residents had not performed any kind of surgery other than cataract surgery. The students' expectations in the number needed to perform

to be considered adequately trained were not met, even after considering that few had unrealistic expectations.

Non-cataract surgical training is neglected and this shows the training program in poor light. Except two, none of the teaching programs had any emphasis on surgeries other than cataract. Nearly one-third of the residents enrolling for ophthalmology resident programs do not graduate into eye surgeons in the US but continue as medical ophthalmologists.⁸ Some are unable to improve their surgical skills even after repeated training for surgical skills and 12% were asked to leave the residency. One study promotes the use of an aptitude test to assess basic surgical inclination/competence like the American Dental Association's Dental (Sample) Admission Test.⁹ A larger turnover of cases and easier acceptance of complications in the Indian setting may be responsible for most of the trainees' metamorphosing into eye surgeons. Clinical audit should be employed to monitor and improve surgical outcome of ophthalmology trainees.¹⁰ Preferred practice patterns put forth by the American Academy of Ophthalmology can be modified and used in Indian settings.

It is concluded that the residency program in ophthalmology is not up to the expectations of postgraduate students in many teaching centers in most of Maharashtra. A study conducted by Thomas *et al.* revealed that despite provision of adequate resources to funded medical colleges, their quality of residency training was inadequate.¹¹ The new curriculum and manual proposed by the National Board of Examination, New Delhi addresses many of these issues. The national board has strived to streamline and standardize postgraduate medical education all over India. We hope that other universities in the country shall also follow a similar pattern.

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References

1. Mendis L, Adkoli BV, Adhikari RK, Muzaherul Haq M, Qureshi AF. Postgraduate medical education in South Asia. *Br Med J* 2004;328:779-81.
2. Murthy GV, Gupta SK, Bachani D, Sanga L, John N, Tewari HK. Status of specialty training in ophthalmology in India. *Indian J Ophthalmol* 2005;53:135-42.
3. Lee AG, Boldt HC, Golnik KC, Arnold AC, Oetting TA, Beaver HA, *et al.* Structured journal club as a tool to teach and assess resident competence in practice based learning and improvement. *Ophthalmology* 2006;113:497-500.
4. Prinz A, Bolz M, Findl O. Advantage of three dimensional animated teaching over traditional surgical videos for teaching ophthalmic surgery: A randomized study. *Br J Ophthalmol* 2005;89:1495-9.
5. Khalifa YM, Bogorad D, Gibson V, Pfeiffer J, Nussbaum J. Virtual reality in ophthalmology training. *Surv Ophthalmol* 2006;51:529-73.
6. Glittenberg C, Binder S. Using 3D computer simulations to enhance ophthalmic training. *Ophthalmol Physiol* 2006;26:40-9.
7. Lippa LM, Boker J, Duke A, Amin A. A novel 3 year longitudinal Pilot study of medical students' acquisition and retention of screening eye examination skills. *Ophthalmology* 2006;113:133-9.
8. Binenbaum G, Volpe NJ. Ophthalmology resident surgical competency: A national survey. *Ophthalmology* 2006;113:1237-44.
9. Romano PE. Measuring surgical skill and proclivity in ophthalmology residency training program applicants using the American Dental Association Dental Admission (sample) test (DAT). *Binocular Vis Strabismus Q* 2002;17:143-6.
10. Gogate PM, Deshpande M, Maske A, Jagdale S. Surgical audit at HV Desai Eye Hospital, Pune: Causes of poor postoperative visual outcome. *Community Eye Health* 2004;17:53-4.
11. Thomas R, Dogra M. An evaluation of medical college departments of ophthalmology in India and change following provision of modern instrumentation and training. *Indian J Ophthalmol* 2008;56:9-16.

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Appendix 1:

Questionnaire Used for Data Collection

Dear Doctor,

We are trying to improve the quality of teaching in our hospital. We request you to kindly answer these questions so that we may know how to improve the standard of teaching and learning. It would not take more than fifteen minutes of your time. Please do answer the questions to the best of your knowledge. You may not put your name at the end of the form if you so wish. We guarantee that the information given by you shall be kept confidential and would not be traced back to you.

Thank you for your kind co-operation.

Prof. Col. Madan Deshpande Prof. Dr. XXXX (of that particular institution)

What do you think should be the ideal system of teaching and training an ophthalmologist? Please rate the following methods on a scale of 0 (worst or useless as a teaching aid) to 4 (excellent or the best way to teach)

1.	Didactic lectures with power point	useful in a scale of			
	0	1	2	3	4
2.	Didactic lectures without power point	useful in a scale of			
	0	1	2	3	4
3.	Seminar - one person presenting, others participating				
	0	1	2	3	4
4.	Case presentation, with demonstration on a patient				
	0	1	2	3	4
5.	Wet lab, learning on animal eyes				
	0	1	2	3	4
6.	Journal club				
	0	1	2	3	4

The following table has four columns for each type of surgery. Please enumerate how many surgeries you have seen so far, how many you think one should assist and how many you think a trainee surgeon should perform to be considered an accomplished surgeon in that particular type of surgery. In the last column please enumerate how many surgeries of that type you have actually done so far

	How many have you seen so far	How many should one ideally assist	How many should one ideally do	How many have you done so far
Conventional extracapsular cataract extraction				
Manual small incision cataract surgery				
Phaco				
Pterygium				
Dacryocystectomy				
Dacryocystorhinostomy				
Squint				
Ptosis				
Entropion, ectropion				
Trabeculectomy				

Do you think Group Discussion is helpful?

- Bimonthly exams: Are they needed? How frequently should tests be held?
- Mock OSCE tests/viva voce - once a year/twice a year. Please suggest moderators
- Do you need specific training to handle instruments like perimeter, HRT, fundus camera, B-scan, UBM, specular Microscope, Nd:YAG laser?
- Do you need any kind of training to handle outreach camps?
- Do you need any kind of training to handle eye bank calls?
- What more is needed to improve our library facilities?
- Any topic which you feel needs to be covered more.