

## Residency evaluation and adherence design study: Young ophthalmologists' perception of their residency programs II: Academics and Research dissertation

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**Purpose:** To know the perception of young ophthalmologists about their dissertation and academics during residency training in order to improve the research output during present residency programs in India. **Methods:** A survey was conducted by Academic and Research Committee of the All India Ophthalmological Society, the world's second largest ophthalmic professional's organization, in 2014–2016 of young ophthalmologists (those who completed residency between 2005 and 2012) to gauge usefulness of dissertation or thesis during postgraduate residency. **Results:** There were 1005 respondents, of whom 531 fulfilled inclusion criteria. On a scale of 0–10, residents rated level of supervision of their dissertation as adequate (mean 5.9/10, standard deviation [SD] = 3.1, median = 6). The level of infrastructure available was for dissertation rated as 5.9/10 (median = 7, SD = 3.1), and 6.2/10 was the score that residents said about value added by the dissertation (median = 7). The dissertation was presented at local (33.5%), state (28.1%), national (15.4%), and international (4%) levels. Students, not supervisors, did most of the local and state level presentations. It was published in some forms at local 210 (39.5%), state (140, 26.4%), national (94, 17.7%), and international (39, 7.3%) levels. On a scale of 0–4, seminars (3/4) and case presentations were (3/4) rated higher than didactic lectures (2.2/4), journal clubs (2.2/4), and wet laboratory (1.1/4). **Conclusion:** Peer-reviewed publications from Indian residency training dissertations were few. Residents felt dissertation added value to their training, but there was a huge range among the responses. Journal clubs and wet laboratories were not graded high in academic programs, unlike seminars and case presentations.

**Key words:** Academics in ophthalmology, dissertation, research in ophthalmology, residency training, thesis

In postgraduate training, it is expected that the student indulges in the same form of research to collate existing knowledge, and if possible, they create new knowledge paradigms. Postgraduate medical education is no exception to this. However, surgical and medical residency training has high demands on the resident's energy and time in terms of patient care, documentation, and learning the subject in-depth. Thus, dissertation, thesis, or research project during the residency is just one of the priorities of the student. These postgraduate students are the foot soldiers for many of the serious research projects of their faculty.

There have been few studies from India about resident feedback about their teaching methods.<sup>[1-3]</sup> Numerous studies from the USA and Canada have focused on journal clubs and wet laboratories a teaching method.<sup>[4-8]</sup> However, there have been no studies, to the best of our knowledge, looking

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at dissertations and thesis done by ophthalmic residents in published literature. The aim of the study was to know the perception of young ophthalmologists about their dissertation and academics during residency training. It would help improve the research output during present residency programs in India and help frame guidelines to for better academic schedules during residency training.

### Methods

All Indian Universities and the National Board of Examination (NBE, New Delhi, India) for medical education have a thesis or dissertation compulsory for a 3-year medical postgraduate degree course. The 2-year diploma course is exempt from thesis in some universities. Both degree and diploma pass outs were included in the study. The All India Ophthalmological Society (AIOS) commissioned a survey of all young ophthalmologists about what they felt

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regarding their residency program. Ophthalmologists with a minimum of 2 years to maximum of 10 years of experience after the completion of their residency and those who had completed their residency training between 2005 and 2012 were included. Those were chosen as the ophthalmologists would have the perspective, after working independently for a few years, but were still “fresh” enough to remember their training days (young ophthalmologists). The survey results were collected through SurveyMonkey and written questionnaires.

The project was discussed and approved by the governing council of the AIOS at its mid-year meeting in 2014. A semi-structured questionnaire was first validated with three independent researchers and a small pilot run for 2 weeks. The questionnaire [Appendix A] was e-mailed and posted to all the participants. The questionnaire was part of a SurveyMonkey link with a forwarding letter requesting the respondents about what was expected from them. A postal, e-mail, and telephonic reminder were sent after each week. In early 2015, heads of institutions of excellence, senior office bearers of the AIOS, and veteran and serving professors were asked to forward the survey link to their former students and residents as a reminder. The participants would have to fill certain demographic details but would not have to disclose their identity, if they so desired. The detailed questionnaire is enclosed as Appendix A. The data were entered into Excel Worksheets and Statistical Package for Social Sciences (SPSS version 16, IBM, Bangalore, India). Each part of the questionnaire had to be answered before the respondents could move to the next part; however, they had an option of leaving certain fields unanswered if they wanted to.

The young ophthalmologists were quizzed about their residency program’s teaching and research details. The level of infrastructure (instruments, equipment, and library) and supervision of the thesis were also enquired (on a scale of 0–10). A scale of 0–10 would be more sensitive than the standard Likert scale of 0–4 and was thus used. They were asked whether their dissertation was presented or published. If so at what level: local, state, national, or international? Were they the presenters or first authors of the same or were their supervisors or significant seniors presenting their research?

The young ophthalmologists were also asked if they had a structured teaching schedule. Was there a set curriculum? Who taught them and how frequently? They were also asked to rate (on a scale of 0–4, the usual Likert scale) how each of the following teaching methodologies: didactic lectures – where a faculty or teacher took a ½–1 h lecture; seminar – where a group of students interacted with faculty as one of them presented on power point; journal club – when the students discussed and dissected a published manuscript in the presence of a faculty; case presentation – when the student presented a patient’s case in front of peers and faculty and a wet laboratory, in which surgical steps were taught on proxy materials or by simulation. The scale of 0–4 was also used for similar study on residency training, published in the Indian Journal of Ophthalmology.<sup>[1]</sup>

The data were entered into Excel Worksheets and SPSS (version 16) was used for data analysis. Mean, standard deviation (SD), and median of the responses were considered.

## Results

While 4212 potential individuals were contacted repeatedly over a period of 17 months, we had 1005 respondents who answered the complete survey. Of the sample, 531 (52.8%) met the inclusion criteria of >2 and <10 years of postresidency (young ophthalmologists). The mean age of the 531 young ophthalmologists was 32.6 years (SD = 4, range, 25–56 years, median = 32) and 325 (61.2%) were male.

Two hundred and ninety-nine (56.3%) respondents had their degrees as Master of Surgery (MS), 31 (5.8%) as Doctor of Medicine (MD), 162 (30.5%) as Diplomate of the National Board (DNB), while 114 (21.5%) respondents were Diploma in Ophthalmic Medicine and Surgery (DOMS/DO). Many had >1°. Three hundred and eighty-six of 531 respondents had reported a topic for dissertation/research study done during residency. One hundred and twenty-one respondents had left the question answered while 16 reported that they did not have a research project as they were diploma students. However, 13 of 16 respondents who said they had no dissertation (all were DO students) still reported making a presentation at local level for some research work.

Of the 129 who had not answered details about their dissertation, 27 were DO, 12 were DO DNB, 5 were DO MS, 49 were MS, 22 were DNB, 7 were MS DNB, 6 were MD, and 1 was MD DNB.

On being questioned if they felt their teaching program was adequate, 374/531 (70.4%) replied in affirmative, 130/531 (24.5%) said it was not, while 27/531 (5.1%) did not answer the question.

The questions pertaining to academics were answered by 365 young ophthalmologists. One hundred and thirty-seven (37.5%) out of 365 respondents did not have a formal review examination during their residency. Only 80/365 (21.9%) did not have a formal teaching schedule.

On a scale of 0–10, students rated teaching activity supervised by experienced faculty as mean 6.4 (SD = 2.7) and median 7 and teaching by senior residents as mean of 5.9 (SD = 3.1) and median 6 [Table 1].

On a scale of 0–4, students were generally satisfied with their academic programs (2.5/4, median = 3). while journal club (mean = 2.2, SD = 1.4, median = 2) and didactic lectures (mean = 2.2 SD = 1.4, median = 2) scored poorly, seminars and case presentations were rated high. Wet laboratory was not present in most institutes; the median score was 1 on a scale 0–4 [Table 1].

Young ophthalmologists were asked to rate the level of supervision they had, level of infrastructure (instruments, equipment, library), and value that the dissertation added to their residency on a scale of 0–10. The results are given in Table 2.

Ninety-two (25.2%) respondents did not submit their research proposal to an Ethical Committee while the rest did apply for and got ethics clearance. On being asked if the dissertation made them well versed in research methodology, 138/359 (38.4%) replied in affirmative, 45/359 (12.5%) said “no,” and 176/359 (49%) reported “to some extent.”

Table 3 shows where the young ophthalmologists’ dissertation study was presented and/or published.

**Table 1: Young ophthalmologists rating of their academic schedule**

	Possible range	Reported range	Mean	SD	Median
Academic schedule					
Academic schedule: Expert faculty	0-10	0-10	6.4	2.7	7
Academic schedule: Residents	0-10	0-10	5.9	3.1	6
Academic schedule's management	0-10	0-10	4.6	3.5	4
Types of academic activities					
Academic schedule: Didactic lectures	0-4	0-4	2.2	1.4	2
Academic schedule: Seminar	0-4	0-4	3.2	1.1	3
Academic schedule: Case presentation	0-4	0-4	4.6		3
Academic schedule: Journal club	0-4	0-4	2.2	1.1	2
Academic schedule: Wet laboratory	0-4	0-4	1.3	1.4	1
Academic schedule: All of the above (overall)	0-4	0-4	2.5	1.1	3

Expert faculty: Those who were honorary or full-time faculty after their senior residency. SD: Standard deviation

**Table 2: Young ophthalmologist's perception of their dissertation/thesis**

Dissertation	Lowest percentage (score 0-3)	Top percentage (score 7-10)	Range of actual responses	Mean	SD	Median
Level of supervision	23.9	44.8	0-10	5.9	3.1	6
Infrastructure for dissertation	21.8	53.1	0-10	6.4	3.1	7
Value added by dissertation	20.8	51.5	0-10	6.2	3.7	7

Lowest percentage: Those who rated 0–3 on a scale of 0–10, Top percentage: Those who rated 7–10 on a scale of 0–10. SD: Standard deviation

**Table 3: Levels at which the dissertation study was presented and published**

Level	Presented (oral)			Presented (poster)			Published by (%)
	Self (%)	Supervisor (%)	Other (%)	Self (%)	Supervisor (%)	Other (%)	
Local	178 (33.5)	23 (4.3)	5 (0.9)	114 (21.5)	17 (3.2)	6 (1.1)	210 (39.5)
State	149 (28.1)	22 (4.1)	15 (2.8)	95 (17.9)	15 (2.8)	10 (1.9)	140 (26.4)
National	82 (15.4)	18 (3.4)	5 (0.9)	88 (16.6)	13 (2.4)	4 (0.8)	94 (17.7)
International	21 (4.0)	13 (2.4)	6 (1.1)	36 (6.8)	12 (2.3)	7 (1.3)	39 (7.3)

## Discussion

Most training programs had a structured teaching schedule, and most residents had submitted their proposal to an Ethics Committee. However, this was not universal. Young ophthalmologists rated their support for the dissertation as high (in terms of infrastructure and supervision), but almost one-third felt that it was very inadequate.

Residents were effective in teaching fellow residents as was reported from a study at Yale.<sup>[9]</sup> They scored just below experienced faculty in their teaching. Accessibility and enthusiasm may have contributed to the residents being popular as teachers.

Journal clubs were not popular, unlike in developed countries. Journal clubs have been found to be effective in teaching critical appraisal of published research.<sup>[6]</sup> A national survey of program directors of ophthalmology residency training programs in Canada found that journal club was mandatory in 12/13 programs with high attendance. Its objectives were to develop critical appraisal skills and to conduct literature search. However, there was no formal teaching or evaluation of these skills. Randomized control trials were the ones most commonly discussed in journal clubs.<sup>[7]</sup>

Journal clubs were perhaps not universal in Indian programs and thus not rated very high by the respondents (mean = 2.2/4, median = 2). Residents were not scoring the journal club very high perhaps because they were not adequately exposed to this tried and tested method of fostering understanding of recent research.<sup>[8,10]</sup>

Wet laboratory too was not rated poorly in our study. Wet laboratories are a norm in many developed countries as surgical training on human eyes is considered daunting. Goats and/or pigs eyes can be made available to practice the steps of cataract surgery and get the feel of the operating microscope. There is even a greater scope for using wet laboratory for noncataract surgeries which are comparatively rarer. Glaucoma and corneal surgeries could be taught on eye bank harvested eyes. However, the recent trend of collecting only corneas, not enucleating the eye, may go against this. Commercially available bacon and cadaveric pigs eyes were used for wet laboratory to teach extraocular muscle surgery.<sup>[8]</sup> The suboptimal rating of wet laboratories in Indian context may be because this method of imparting skill has been underutilized.

Residents/young ophthalmologists reported case presentation as the most effective way to learn. Seminars came second. When a routine or difficult case was discussed with



the faculty and peers, sometimes with faculties from different specialty, the problem-solving approach was considered best for learning. In seminars, a similar approach was used but without the patient being there.

Canadian ophthalmology residents were allowed to attend at least one conference every year which was paid for by the department.<sup>[4]</sup> While the AIOS keeps special concessional rates for ophthalmologists in training, most have to bear their travel and stay expenses. The scenario of resident presentations and publications may change as the Medical Council of India and many fellowships admission offices are asking for presentations and publications. While the number of residents presenting oral and poster presentation may increase, peer-reviewed publications would need greater quality in the research work done. However, if we calculate the percentage of publications on the denominator of 365, the respondents who completed questionnaire and not 531, total number of young ophthalmologists, percentage of oral and poster presentations, and publications are quite respectable.

Many programs were excellent, scored 9 or 10 by their residents, but there were other's where the support for academics and research was rudimentary. The challenge is to bridge this gap and make residency training excellent all over the country, something only standardization and uniformity would do. The higher speciality training program in UK is consistent because it defines clear goals in training and puts forth an explicitly outlined curricular that advances these goals and conducts regular assessments of the trainees achievement of these goals.<sup>[10,11,12]</sup> In the United States, the Accreditation Council for Graduate Medical Education (ACGME) tried to establish a program that formally defined a set of learning competencies, stresses graduated and progressive responsibility and provided frequent evaluation and feedback.<sup>[4,12]</sup> The need of the hour is a culture of innovation and knowledge sharing that looks at the resident as a creative doctor-in-training whose skills have to be sharpened and mind fostered for better patient care, rather than a passive student whose duty is to serve the department and absorb knowledge in the process.

#### Limitations of the study

The results are based on young ophthalmologists' responses, which may have recall bias. The individual responses may have been conditioned by respondent's prejudices and the demographic information provided by the respondents was not verified. Residency training can be quite intense and stressful for many residents.<sup>[13]</sup> This study did not look into that aspect.

There was a huge variation in the support given to the residents to undertake their research during the residency. While local and state level presentation by residents were common there were few publications in peer reviewed journals. Most, but not all, residents had a structured teaching schedule and were taught by faculty and senior peers. They were satisfied with their case presentations and seminars but did not rate journal clubs and wet labs high.

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#### Conflicts of interest

There are no conflicts of interest.

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## Appendix

### Appendix A: Questionnaire used in the study

All India Ophthalmology Society

#### Academic and Research Committee

Improving Residency Training and Basic Competency Program

Basic competency in young ophthalmologists

Name: \_\_\_\_\_

Gender: \_\_\_\_\_

Age: \_\_\_\_\_

Geographic location: \_\_\_\_\_

AIOS number (if member): \_\_\_\_\_, Not a member: \_\_\_\_\_

#### Education

MBBS from:

#### Was ophthalmology the first choice of career?

Top choice

One of the three top choices

Not among the first three choices

#### Ophthalmology residency from:

When started, completed

#### Type of institution

1. Where did you pass from?

Medical college

Nongovernment organ hospital

Corporate hospital

Pvt. eye hospital

Pvt. medical college

2. The institution you passed from was set in a

Metro city

Large town

District headquarters

Any other/smaller town

3. You have done your

MD

MS

DNB

DO

4. Number of years since you passed the exit examination \_\_\_\_\_ years

#### Your residency training:

5. Did you learn/were you taught the following outpatient skills needed for your practice?

Refraction

Slit-lamp examination

Direct ophthalmoscopy

Squint/orthoptic evaluation

Applanation tonometry

Gonioscopy

+78/+90 D

Indirect ophthalmoscopy

Keratometry

Pediatric visual acuity testing

6. Were you adequately exposed to the following diagnostic tests?

Automated perimetry

Fundus photography

Pachymetry

Fluorescein angiography

Optical coherence tomography

A-scan biometry

B-scan ultrasonography

Synoptophore

Hess diplopia charting

7. Were you taught contact lens evaluation

8. Were you adequately exposed to

Neodymium-doped yttrium aluminum garnet (YAG) laser capsulotomy

Double frequency YAG laser

9. Did you perform the following surgeries

Manual small incision cataract surgery

Conventional extracapsular cataract extraction

Phacoemulsification

Trabeculectomy

Strabismus correction

Pterygium excision

Dacryocystectomy

Dacryocystorhinostomy

Chalazion incision and drainage

Laser-assisted *in situ* keratomileuses, refractive surgery

Retinal detachment surgery

Vitreotomy

Keratoplasty

Lid surgeries

Managing ocular emergencies

10. Were you exposed to the following

Eye banking

Community eye care

11. On what topic was your dissertation?

Was the dissertation presented at a local, state, national conference? Published?

Who did the presentation at each level?

Was it in oral or poster format?

Did you seek an Ethics Committee approval?

Were you well-versed with research methodology at the end of it?

12. Taught program – the academic schedule

Didactic lectures

Seminars

Case presentations

Journal club

Wet lab

#### **After the residency**

Any additional training acquired

Fellowship?

Which subspecialty

Where do you plan to practice?

Metro

Large city

Small city

Taluk

Village

What type of practice?

Government-NGO Hospital Teaching Institution

Solo Pvt. Practice

Group practice

Is spouse a doctor, optometrist?

Are you from a family of ophthalmologist?

Why did you choose this subspecialty/comprehensive ophthalmology?

Career

Money

Knowledge

**Personal profile**

Would you provide some profile of yours

Name (optional): \_\_\_\_\_

Age: \_\_\_\_\_

Gender: \_\_\_\_\_

First language (mother tongue): \_\_\_\_\_

Was the residency training held in a state with a different language than yours? Did you face any problems communicating with the patients?

Are you a first-generation medical professional?

Married

Having children