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Original Research Article

Assessment of skills and knowledge in clinical ophthalmology: A survey among undergraduate medical students during internship in SKNMC and GH, Pune

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ABSTRACT

Background: Internship is the last year of undergraduate medical training wherein a graduate is exposed to actual patients, conduct varied tasks and acquire skills under supervision of a faculty so that medical student becomes capable of performing clinical skills independently. In India interns have a compulsory 15 days posting in the subject of Ophthalmology. In this study we assessed the clinical skills and knowledge of undergraduate students using a structured questionnaire.

Materials and Methods: A detailed questionnaire based study was conducted which had four parts: (1) clinical skills (2) diagnosis of anterior segment diseases (3) diagnosis of posterior segment diseases and (4) ocular emergencies and sight threatening diseases. Interns were asked to fill this questionnaire before and after completion of 15 days training.

Results: A statistically significant improvement was found in assessment of clinical skills, anterior segment eye diseases and ocular emergencies; whereas assessment of posterior segment diseases showed no statistically significant improvement.

Conclusion: The undergraduate teaching program in Ophthalmology seems to be adequate in diagnosis of anterior segment eye diseases and ocular emergencies; though more focus is required in training of diagnosis of posterior segment diseases and certain ocular emergencies. There is a need of change in the structure of training programs of undergraduate students in order to improve their clinical skills and knowledge of appropriate referral after graduation during their independent practice.

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1. Introduction

General practitioners often treat ophthalmic conditions in both government and commercial clinics around the world.¹ Health care practitioners in India commonly treat patients with eye symptoms such as pain, redness and watering. It's also noteworthy to observe that individuals who presented with acute red eye issues to primary healthcare doctors were often misdiagnosed or mismanaged. Medical students must have good knowledge in Ophthalmology which they

have acquired during their course of study, for their future practice. The Ophthalmology subject is taught in the 2nd and 3rd year of MBBS course (6th to 7th semester) in India during posting using lectures, seminars, clinical teaching in the eye clinic, ward and operation theater. An introductory lecture on anatomy and physiology of eye is given, followed by primary examination of the eye which includes history taking of eye symptoms, torch light examination of anterior segment; vision testing (distant vision, near vision, colour vision), testing ocular movements, assessment of intraocular pressure (digital tonometry) and fundus examination with direct ophthalmoscope. The clinic is

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concluded with important practical points and take-home message. On the last day of posting, the student's knowledge of eye diseases is tested by a term end exam. In comparison, with NMC recommendations, undergraduate students in India received a satisfactory number of hours of both classroom and clinical training. The NMC recommends clinical training of 10 weeks and a total of 100 teaching hours in Ophthalmology.² These guidelines suggest a greater amount of ophthalmology exposure in undergraduate medical education in India when compared with International Council of Ophthalmology (ICO) guidelines. The ICO recommends 40–60 hours of ophthalmology exposure during undergraduate training.³

Internship is the last year of undergraduate medical training wherein a graduate is exposed to actual patients, conduct varied tasks and acquire skills under supervision of a senior faculty so that medical student becomes capable of performing clinical skills independently. In India undergraduate students have a compulsory 15 days rotation in Ophthalmology during their internship.²

The NMC provides a list of skills that the student must demonstrate at the end of their training in Ophthalmology. This includes knowledge of common eye conditions in the community, ability to manage them, recognize visual impairment, blindness in the community, and also determine eye conditions which require referral to an ophthalmologist.²

2. Aims and Objectives

Aims of this study were

1. To assess the adequacy of ophthalmology teaching in undergraduate medical education during internship.
2. To assess the comfort level of interns in diagnosing and treating common eye problems and performing ophthalmic skills.

3. Materials and Methods

After approval from institutional ethical committee, interns posted in ophthalmology department in the year 2022 during their 15 days rotation in internship were included in this prospective study. Interns were asked to fill out a structured questionnaire and submit their anonymous responses in the form of yes/no answers.⁴ Data was collected from interns before starting and at the end of 15 days posting. The questionnaire was prepared with reference to the questionnaire used by Reddy et al., in his study.⁴ The validity of the questionnaire was assessed by senior faculty members from the Department of Ophthalmology and reliability was tested by Test-Retest method among small group of interns.

The questionnaire had four parts:

1. Clinical skills

2. Diagnosis of anterior segment diseases
3. Diagnosis of posterior segment diseases
4. Ocular emergencies and sight threatening diseases.

The participation was voluntary. Participants were assured that their personal identity won't be disclosed and the data will be kept confidential except for research purpose.

OpenEpi.com was used for statistical analysis. Independent t-test was applied to evaluate statistical significance.

3.1. Questionnaire

Survey questionnaire for assessment of skills and knowledge in clinical ophthalmology among interns of Smt Kashibai Navale, Medical College and General Hospital, Pune.

Please circle the appropriate answer to the following
Gender: Male/Female

History taking and ocular examination

1. Taking history related to eye problem in a patient: Yes/No
2. Examination of anterior segment of the eye with torch light: Yes/No
3. Performing swinging flash light test to detect relative afferent pupillary defect: Yes/No
4. Testing extraocular muscle movements: Yes/No
5. Assessing visual fields by confrontation test: Yes/No
6. Performing fundus examination with direct ophthalmoscope: Yes/No
7. Assessing intraocular pressure by fingers digital tonometry: Yes/No
8. Performing fluorescein staining of cornea: Yes/No

Diagnosis of anterior segment eye diseases

9. Can you diagnose Sty: Yes/No
10. Can you diagnose Chalazion: Yes/No
11. Can you diagnose Conjunctivitis: Yes/No
12. Can you diagnose Pterygium: Yes/No
13. Can you diagnose Corneal abrasion: Yes/No
14. Can you diagnose Corneal foreign body: Yes/No
15. Can you diagnose Cataract: Yes/No
16. Can you diagnose Squint: Yes/No
17. Can you diagnose Sixth cranial nerve palsy: Yes/No
18. Can you diagnose Third cranial nerve palsy: Yes/No

Diagnosis of fundus diseases

19. Can you diagnose Diabetic retinopathy: Yes/No
20. Can you diagnose Hypertensive retinopathy: Yes/No
21. Can you diagnose Papilloedema: Yes/No
22. Can you diagnose Optic atrophy: Yes/No
23. Can you diagnose Glaucomatous cupping of optic disc: Yes/No

Ocular emergencies/sight threatening eye diseases

24. Can you diagnose Corneal ulcer: Yes/No
 25. Can you diagnose Corneal perforating injury: Yes/No
 26. Can you diagnose Hyphema: Yes/No
 27. Can you diagnose Acute iridocyclitis: Yes/No
 28. Can you diagnose Acute congestive glaucoma: Yes/No
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4. Results

A total of 150 interns posted in Ophthalmology over the course of 1 year of internship participated in our study. Out of 150 students 80 were male students and 70 were female students. We found that before starting the posting 38.51% of interns were able to take history related to eye problems, 33.83% interns were able to assess anterior segment eye diseases, 35.73% were able to diagnose posterior segment eye diseases and 38.53% were able to diagnose ocular emergencies.

At the end of 15 days rotation 73.62% were able to take history related to eye problems and perform ophthalmic examination, 63.66% were able to assess anterior segment eye diseases, 37.06% were able to diagnose posterior segment diseases and 64.8% were able to assess ocular emergencies.

OpenEpi.com was used for statistical analysis.

Independent t-test was applied to evaluate statistical significance which shows significant difference between results of history related eye problems, anterior segment diseases and ocular emergencies (p -value <0.000001) and no significant difference in posterior segment diseases evaluation (p -value 0.0009).

No statistically significant correlation was found between male vs female responses. This was assessed using Pearson's correlation coefficient.

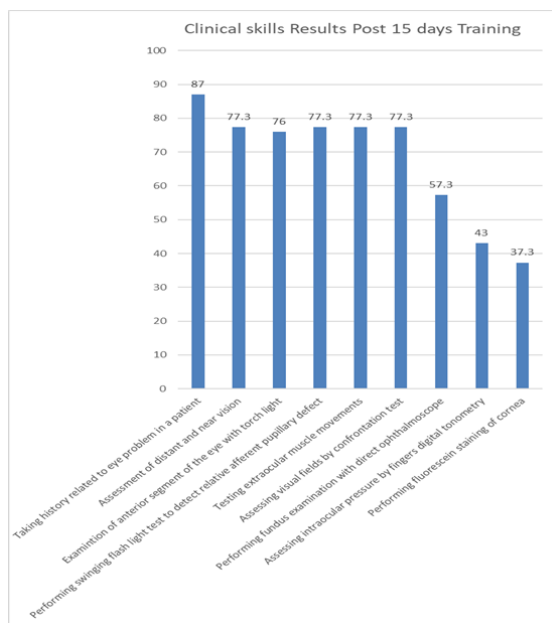


Fig. 1: Clinical skills evaluation post 15 days training

5. Discussion

In this study interns posted in Ophthalmology department during the year 2022 were included. A structured

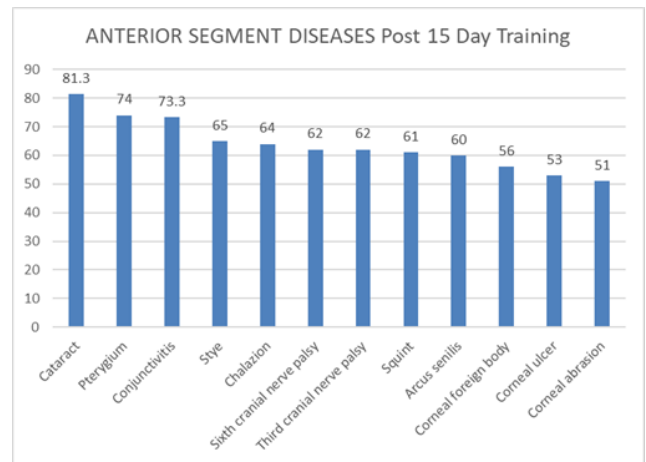


Fig. 2: Evaluation of diagnosis of anterior segment diseases post 15 days training

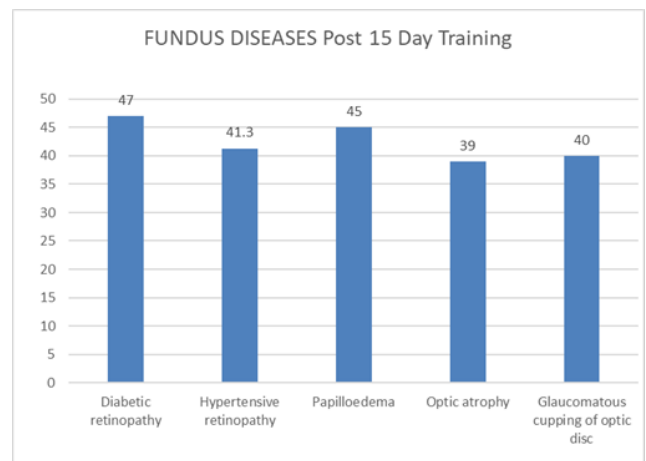


Fig. 3: Evaluation of diagnosis of posterior segment diseases post 15 days training

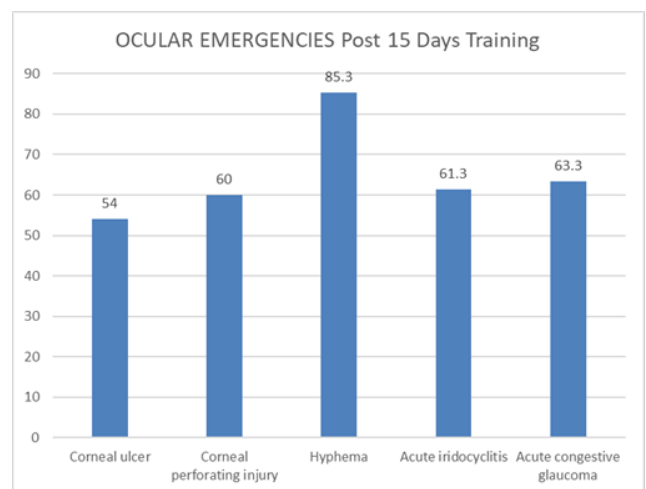


Fig. 4: Evaluation of diagnosis of posterior segment diseases post 15 days training

Table 1: Pre and post test results independent T-test; Source: openEpi.com

Parameter	Pre-test (% yes)	Post-test (% yes)	p- value
Clinical skills	38.518	73.629	<0.0000001
Anterior segment disease	33.833	63.666	<0.0000001
Fundus diseases	35.733	37.066	0.0009
Ocular emergency	38.533	64.8	<0.0000001

questionnaire was given to the interns before and after completion of 15 days of ophthalmology training.

The results of this study were found to be consistent with the study carried out by Sagili Chandrasekhara Reddy and Soe Moe. In their study 292 students posted in ophthalmology department were included. More than 90% of students were able to perform the clinical skills such as history taking, visual acuity test, testing of ocular movements and visual field test confidently. More than 90% of students were able to diagnose anterior segment eye diseases confidently except corneal abrasion (83.9%).⁴ Nearly two-thirds of students were able to diagnose fundus diseases confidently except optic atrophy (49.3%). More than 73% were able to diagnose ocular emergencies confidently except acute iridocyclitis (54.8%).⁴

In our study interns showed improvement in the ability to take history related to eye problems (86.6%), assessment of distant and near vision (77.3%), performing swinging torch light examination (77%), testing extraocular muscle movement (77.3%), assessing intraocular pressure by digital tonometry (80%), assessing certain anterior segment eye diseases like cataract (81.3%), pterygium (74%), sty (65.3%) and cranial nerve palsies (62%).

Proficiency in diagnosing posterior segment eye diseases did not improve much at the end of the posting. 42.6% interns showed confidence in diagnosing diabetic retinopathy, 36% in diagnosing hypertensive retinopathy.

Understanding of ocular emergencies was found to be fair as 54% could diagnose corneal ulcer, 60% could diagnose corneal perforating injuries, and 85.3% were able to diagnose hyphema.

6. Conclusion

Most of the participants in the study reported a satisfactory level of comfort in diagnosing anterior segment eye diseases as well as performing ophthalmic examination. As 81.3% were able to diagnose cataract was encouraging in itself, as cataract is the leading cause of preventable blindness in India. Through this study, we found that

most study participants could take history related to eye problems, diagnose anterior segment diseases but, recognition of posterior segment diseases and ocular emergencies could show some improvement. This dearth of knowledge in diagnosis of posterior segment diseases and ocular emergencies owe to the time-constraint of training period and proficiency in this area requires extended period of exposure.⁵ The current training in undergraduate ophthalmology proves to be effective in certain areas and with effective teaching methods tailored toward primary eye care and appropriate referral would help to increase the medical student's comfort in managing common eye problems.

7. Source of Funding

None.


8. Conflict of Interest

None.

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