Research Article

Comparison of Slit Lamp Teaching Versus Bedside Teaching in Post Graduate Ophthalmology Residency at a Teaching Hospital

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Abstract

Background: Globally, 80 % of the visual loss is preventable. A major proportion of patients presenting in tertiary care hospitals is that of ophthalmology constituting 20% emergency patients and 18 % outpatient consultations.

Objective: To compare the effect of slit lamp teaching versus bedside teaching in ophthalmology residency at a tertiary level teaching hospital.

Methodology: This questionnaire based cross sectional survey was conducted after ethical approval at College of Ophthalmology and Allied Vision Sciences/Institute of Ophthalmology, Mayo Hospital, Lahore. Ophthalmology residents from first to fourth year of their training program were included in the study while Consultants, medical officers, fellows and house officers were excluded from the study. A web based close ended questionnaire (Google form) was developed consisting of 13 questions covering different aspects of slit lamp and bedside teaching. Paired sample t-test was applied to check significance among two methods.

Results: Upon stratification of the data based on year of residency training, among 3rd year residents, the mean score of bedside teaching was significantly reduced as compared to slit lamp teaching [1.29±0.48 vs 1.86±0.37, $t(6) = 2.828$, $p = 0.03$] when they were asked whether practical skills trainings facilitated. Moreover, mean score of bedside teaching was significantly reduced as compared to slit lamp teaching among 1st year and 3rd year students when they responded to the question "Is clinical reasoning demonstrated", 1st year: 1.13± 0.64 vs 1.75±0.46. $t(7) = 3.416$, $p = 0.011$ and for 3rd year: 1.14±0.37 vs 2.00±0.00, $t(6) = 6.00$, $p = 0.001$.

Conclusion: Both slit lamp Teaching and Bedside teaching are vital in ophthalmology residency as they complement each other in making up shortcomings of each other.

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Introduction

Globally, 80 % of the visual loss is preventable.[1] A major proportion of patients presenting in tertiary care hospitals is that of ophthalmology constituting 20% emergency patients and 18 % outpatient consultations.[2] Age-related eye diseases including cataract, glaucoma, corneal and macular degenerations are becoming more prevalent due to growing old age population.[3] Hence, it is crucial that post graduate residents are provided with adequate ophthalmic knowledge and skills to effectively manage

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ophthalmic patients.

Training of residents forms the backbone of any medical sub- specialty training.[4] For better validity and comprehensive training programs, different regulatory authorities are working day and night so that better medical practitioners are produced who are fully equipped to serve the community.[5] Ophthalmology residency program has undergone dramatic changes after facing numerous challenges. Now a days residency programs are focused on conveying ample amount of knowledge to trainees, improving their surgical skills and developing new tools to meet educational outcomes.[6] With new advancements in knowledge and surgical procedures, the amount of information that must be learnt is increasing but the duration of training has not increased. The training program is aimed at accommodating constraints placed on work hours of residents. Therefore, the focus of training programs should be on acquisition of core competencies.[7,8,9] This, in turn require new assessment tools for measuring performance of trainees (during clinical rotation, operation theatres and emergency rooms).[10,11] The training should emphasize on gaining basic knowledge of the field, developing diagnostic skills and mastering best treat options and surgical skills. The training programs should train the residency graduates so that they can provide ethical, cost- effective and high quality health care. Ophthalmology training supervisors perform a key role in effective transmission of skills and knowledge to their residents via didactic teaching, bed side rounds, slit lamp teaching, case presentations, supervising surgical skills and guiding residents in their research.

Over the years, medicine has been described as an art that should be taught at the bedside, but this rule changes when it comes to ophthalmology training because an effective part of patient's examination is done on slit lamp.[12] So, a balanced combination of both teaching strategies is essential for gaining best ophthalmology training. A study conducted by Gogate et al studied young Ophthalmologist's perception of their residency programs in clinical and surgical skills.[4] It was noted that residents rated slit lamp teaching 9.8 out of 10 in terms of clinical skills teaching. Another study conducted by Zhang et al found that junior medical officers (JMOs) and medical students do not depict raised confidence level on basic ophthalmology skills and knowledge.[13]

During literature search, no study is found comparing the quality of resident training obtained from bedside examination versus examination through slit lamp. This is particularly significant as new technologies and modalities are required in patient's management. The ideal mixture of bedside teaching and slit lamp teaching is necessary. The rationale of this study is to gain residents' perspective on the said topic and this will lead to effective residency training ultimately helping in effective treatment of patients.

Methods

This questionnaire based cross sectional survey was conducted after ethical approval (COAVS/1108/22) at College of Ophthalmology and Allied Vision Sciences/ Eye Unit III/Mayo Hospital, Lahore. A sample size of 15 was calculated[14] by using 95% confidence interval, 10% absolute precision and 0.96 estimated population proportion by using the following formula, $\frac{Z^2_{1-\frac{\alpha}{2}} p(1-p)}{d^2}$

Ophthalmology residents from first to fourth year of their training program were included in the study while Consultants, medical officers, fellows and house officers were excluded from the study. A web based close ended questionnaire (Google form) was developed consisting of 12 questions covering different aspects of slit lamp and bedside teaching. The questionnaire was circulated via a social media application (what Sapp) to ophthalmology residents in Mayo Hospital, Lahore. Twenty four ophthalmology residents consented to be the part of study and recorded their responses in questionnaire which were then evaluated. Data was entered and analyzed in SPSS. In this study paired t-test was used to compare the mean scores of slit lamp teaching and bedside teaching reported by every individual respondent.

Results

A total of 24 post-graduates participated in the study and filled the pre-formed questionnaire. Out of 24 participants, 15 (62.5 %) were FCPS residents and 9 (37.5 %) were MS residents. Among all the respondents, 8 (33.3 %) were in the 1st year of their post-graduation training, 5 (20.8 %), 7 (29.2 %) and 4 (16.7 %) were in 2nd, 3rd, and 4th year, respectively.

Overall, no statistically significant difference was observed between the mean scores of slit lamp teaching and bedside teaching (Table 1). However, upon stratification of the data based on year of residency training, among 3rd year residents, the mean score of bedside teaching was significantly reduced as compared to slit lamp teaching [1.29±0.48 vs 1.86±0.37, t(6) = 2.828, p = 0.03] when they were asked whether practical skills trainings facilitated. Moreover, mean score of bedside teaching was significantly reduced as compared to slit lamp teaching among 1st year and 3rd year students when they responded to the question "Is clinical reasoning demonstrated", 1st year: 1.13±0.64 vs 1.75±0.46. t(7) = 3.416, p = 0.011 and for 3rd year: 1.14±0.37 vs 2.00±0.00, t(6) = 6.00, p = 0.001. Nevertheless, the mean score of bedside teaching was demonstrated to be increased compared to slit lamp teaching among the student of 1st year when they were asked if residents are encouraged to present patient's management [1.50±0.53 vs 0.75± 0.70, t(7) = -2.393, p = 0.04] (Table 2).

On stratifying data into program of study, only a significantly increased score of slit lamp teaching was observed in MS enrolled participants for the asked question "Is clinical reasoning demonstrated", 2.00±0.00 vs 1.33 ±0.50, t(8) = 4.00, p = 0.004 (Table 3).

Overall, majority [21(87.5 %)] of the participants showed their preference of teaching as both the teaching methods combined, whereas, 1 (4.2 %) participant preferred bedside teaching only and 2 (8.3 %) of them preferred slit lamp teaching only.

Discussion

Feedback was collected through google forms, circulated via social media (whatsapp) among ophthalmology residents. The results were based on responses of residents in 1st to 4th year of their training program. The results were based on responses of young ophthalmologists in different years of training about their residency, and hence there would be some recall bias. However, they are questioned about basic clinical skills acquired during training that stretched over 4 years and is foundation of their residency. Hence, the responses were likely to be accurate. The responses were kept anonymous to avoid any bias.

The field of ophthalmology has been an emerging specialty among medical graduates for post graduate training. For improved residency training, core competency curriculum is being used by American Academy of Ophthalmology. Similarly, over the years, the Royal College of ophthalmologists and International Council of Ophthalmology have developed various strategies

Table 1: *Mean score comparison of slit lamp teaching and bedside teaching*

Sr No	Question	Mean score (n = 24)		P value
		Slit lamp teaching	Bedside Teaching	
1	How much the findings of clinical examination are explained	1.38 ± 0.49	1.50 ± 0.65	0.47
2	Are practical skills trainings facilitated? (clinical methods performance)	1.63 ± 0.64	1.50 ± 0.51	0.47
3	Is clinical reasoning demonstrated? (DD & patient management)	1.63 ± 0.71	1.29 ± 0.55	0.07
4	Is teaching offered to resident level (year of training)?	1.46 ± 0.72	1.50 ± 0.72	0.80
5	Are residents encouraged to present patient's management?	1.50 ± 0.72	1.46 ± 0.58	0.83
6	Was adequate feedback given?	1.21 ± 0.88	1.25 ± 0.79	0.80
7	Does teacher answer the student's questions appropriately?	1.38 ± 0.64	1.38 ± 0.49	1.00
8	Are communication skills with patients enhanced	1.38 ± 0.82	1.29 ± 0.55	0.64
9	Does every resident gets adequate chance to participate in round?	1.17 ± 0.91	1.29 ± 0.55	0.54
10	Does it prepare the residents in a better way for exit exam?	1.42 ± 0.50	1.38 ± 0.49	0.71

*Statistically significant
Note: The scores are taken as None:0, Moderate:1 and Good:2

Table 2: *Mean score comparison of slit lamp teaching and bedside teaching based on responses to all the questions stratified by year of residency*

Sr No	Question	Year of residency	Mean score (n = 24)		P value
			Slit lamp teaching	Bedside Teaching	
1	How much the findings of clinical examination are explained	1st	1.50 ± 0.53	1.63 ± 0.51	0.68
		2nd	1.20 ± 0.44	1.50 ± 0.54	0.17
		3rd	1.29 ± 0.48	1.14 ± 0.90	0.73
		4th	1.50 ± 0.57	1.75 ± 0.50	0.63
2	Are practical skills trainings facilitated? (Clinical methods performance)	1st	1.50 ± 0.75	1.50 ± 0.53	1.00
		2nd	1.60 ± 0.89	1.80 ± 0.44	0.70
		3rd	1.86 ± 0.37	1.29 ± 0.48	**0.03***
		4th	1.50 ± 0.57	1.50 ± 0.57	1.00
3	Is clinical reasoning demonstrated? (DD & patient management)	1st	1.75 ± 0.46	1.13 ± 0.64	**0.01***
		2nd	1.40 ± 0.89	1.80 ± 0.44	0.17
		3rd	2.00 ± 0.00	1.14 ± 0.37	**0.001***
		4th	1.00 ± 1.15	1.25 ± 0.50	0.76
4	Is teaching offered to resident level (year of training)?	1st	1.13 ± 0.83	1.38 ± 0.74	0.45
		2nd	1.80 ± 0.44	1.80 ± 0.44	1.00
		3rd	1.43 ± 0.78	1.14 ± 0.90	0.45
		4th	1.75 ± 0.50	2.00 ± 0.00	0.39
5	Are residents encouraged to present patient's management?	1st	0.75 ± 0.70	1.50 ± 0.53	**0.04***
		2nd	2.00 ± 0.00	1.40 ± 0.89	0.20
		3rd	1.86 ± 0.37	1.43 ± 0.53	0.20
		4th	1.75 ± 0.50	1.50 ± 0.57	0.39
6	Was adequate feedback given?	1st	0.88 ± 0.83	1.25 ± 0.70	0.28
		2nd	1.60 ± 0.89	1.20 ± 1.09	0.37
		3rd	1.57 ± 0.78	1.57 ± 0.53	1.00
		4th	0.75 ± 0.95	0.75 ± 0.95	NA
7	Does teacher answer the student's questions appropriately?	1st	1.25 ± 0.70	1.13 ± 0.35	0.59
		2nd	1.60 ± 0.54	1.80 ± 0.44	0.62
		3rd	1.29 ± 0.75	1.43 ± 0.53	0.68
		4th	1.50 ± 0.57	1.25 ± 0.50	0.39
8	Are communication skills with patients enhanced?	1st	1.25 ± 0.70	1.13 ± 0.35	0.68
		2nd	1.40 ± 0.89	1.80 ± 0.44	0.17
		3rd	1.71 ± 0.75	1.43 ± 0.53	0.52
		4th	1.00 ± 1.15	0.75 ± 0.50	0.63
9	Does every resident gets adequate chance to participate in round?	1st	1.25 ± 0.70	1.25 ± 0.46	1.00
		2nd	1.20 ± 1.09	1.80 ± 0.44	0.20
		3rd	1.43 ± 0.97	1.14 ± 0.37	0.45
		4th	0.50 ± 1.00	1.00 ± 0.81	0.49
10	Does it prepare the residents in a better way for exit exam?	1st	1.25 ± 0.46	1.25 ± 0.46	1.00
		2nd	1.40 ± 0.54	1.80 ± 0.44	0.17
		3rd	1.57 ± 0.53	1.43 ± 0.53	0.35
		4th	1.50 ± 0.57	1.00 ± 0.00	0.18

Table 3: *Mean score of comparison slit lamp teaching and bedside teaching based on responses to all the questions stratified by program of residency*

Sr No	Question	Program of residency	Mean score (n = 24)		P value
			Slit lamp teaching	Bedside Teaching	
1	How much the findings of clinical examination are explained	FCPS	1.33 ± 0.48	1.67 ± 0.48	0.13
		MS	1.44 ± 0.52	1.22 ± 0.83	0.44
2	Are practical skills trainings facilitated? (clinical methods performance)	FCPS	1.53 ± 0.74	1.40 ± 0.50	0.61
		MS	1.78 ± 0.44	1.67 ± 0.50	0.59
3	Is clinical reasoning demonstrated? (DD & patient management)	FCPS	1.40 ± 0.82	1.27 ± 0.59	0.61
		MS	2.00 ± 0.00	1.33 ± 0.50	**0.004***
4	Is teaching offered to resident level (year of training)?	FCPS	1.53 ± 0.64	1.67 ± 0.61	0.33
		MS	1.33 ± 0.86	1.22 ± 0.83	0.78
5	Are residents encouraged to present patient's management?	FCPS	1.67 ± 0.61	1.33 ± 0.61	0.173
		MS	1.22 ± 0.83	1.67 ± 0.50	0.16
6	Was adequate feedback given?	FCPS	1.13 ± 0.91	1.13 ± 0.83	1.00
		MS	1.33 ± 0.86	1.44 ± 0.72	0.59
7	Does teacher answer the student's questions appropriately?	FCPS	1.40 ± 0.63	1.33 ± 0.48	0.67
		MS	1.33 ± 0.70	1.44 ± 0.52	0.72
8	Are communication skills with patients enhanced	FCPS	1.40 ± 0.91	1.20 ± 0.56	0.42
		MS	1.33 ± 0.70	1.44 ± 0.52	0.68
9	Does every resident gets adequate chance to participate in round?	FCPS	1.07 ± 0.96	1.20 ± 0.56	0.63
		MS	1.33 ± 0.86	1.44 ± 0.52	0.72
10	Does it prepare the residents in a better way for exit exam?	FCPS	1.40 ± 0.50	1.27 ± 0.45	0.33
		MS	1.44 ± 0.52	1.56 ± 0.52	0.59

to make training programs more comprehensive.[15,16] Hoonpongsimanont et al. formulated 40 minutes teaching session consisting of three stations focusing on tonometry, slit lamp and fundoscopy. The session used two instructors and low-cost resources. A pre- and post-questionnaire evaluated students' confidence levels. This study demonstrated that a hands-on workshop significantly improved students' confidence in ophthalmologic examination, especially in using slit lamp and tonometry.[17] The ultimate aim of a training program is to produce intellectual, competent and independent practitioners in outdoor settings, wards or operation theaters.[18] Inability to do so will not only compromise standard of training but will also be responsible for exhaustion of residents.[19] According to recent guidelines by Accreditation Council for Graduate Medical Education (ACGME), an increased trend towards increased supervision in residency is necessary for improved patient care.[20] So, selection of best way of supervision is necessary to enhanced training outcomes. Efforts are needed to maintain a balance between slit lamp and bedside teaching to maximize trainee education and ultimately safety of the patient.[21]

The specialty of ophthalmology has predominantly outdoor setting with major time spent in outpatient clinics and hence interaction on slit lamps. However, empathy and patient- doctor interaction skills can be improved by practicing indoor and bedside interaction with patients. Our computerized literature search showed no published reports comparing the two training methods of slit lamp and bed side teaching in ophthalmology. An understanding of best teaching method (slit lamp or bedside) or a combination of both is useful for standardizing the ophthalmology training. However, there is a great variability among different centers in regard to teaching method being offered.

Studies like this will help standardize the training at national and later on at international level.

A study shows that interaction between supervisor and resident is approximately 6 minutes per patient in out-patient setting.[22] Whereas, the time required per patient during bedside teaching is 10 minutes on average but a greater number of residents are involved in the interaction. A balance of these two techniques not only ensures sufficient learning opportunities for residents but also helps to avoid inadvertent delays in patient care.[23] The ophthalmology training programs are designed to impart residents with an expanding basic knowledge along with surgical skills and ethics.[24] Ward rounds can also help improve other qualities of residents and trainers, with a better insight towards team work, coordination, care planning and role playing. This will provide a cohesive and improved treatment plan and patient care. Ward rounds are a significant form of team work in the hospital setting, providing a forum for reviewing and planning patient care.

Identifying measures of quality is critical to resident education. Validated tools are not readily available but they are clearly needed for improved training outcomes. A standard structured training program incorporating both slit lamp and bedside teaching methods that focuses on skill acquisition of residents is the needed to ensure competency of trainees with provision of improved quality of service for patient care.

Conclusion

Both slit lamp Teaching and Bedside teaching are vital in ophthalmology residency as they complement each other in making up shortcomings of each other. This may result in improving the quality of post-graduate ophthalmic residency program by concentrating on practical learning of residents.

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