ORIGINAL ARTICLE

COMFORT LEVEL OF POST GRADUATE RESIDENTS WORKING IN DIFFERENT CLINICAL DOMAINS IN MANAGING COMMON OPHTHALMIC CONDITIONS

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Background: Ophthalmological conditions are frequently encountered in almost all clinical specialties. Assessing the adequacy of ophthalmology teaching in undergraduate medical education is important in order to diagnose and manage different ophthalmological conditions. The objective of this study was to determine the comfort level of post graduate residents working in different clinical domains in managing common ophthalmic conditions. **Methods:** A cross sectional survey involving 277 post graduate residents was carried out over a period of six months in both private and public tertiary care hospital. A questionnaire containing two sections and 17 variables in total were distributed among Medical Residents of different specialties except ophthalmology residents. Participants of the study were selected through consecutive non probability sampling. **Results:** Mean hours of classroom based ophthalmology instruction during undergraduate program was 59.38 hours (55.9) and mean hours of clinical based ophthalmology instruction during undergraduate program was 62.73 hours (60.8) 54% were either "not comfortable" or "somewhat comfortable" in managing common ophthalmic condition. **Conclusion:** Teaching hours in under graduate program meet or exceed requisite criteria. However graduating doctors generally feel that the time spent does not provide them with the comfort and skill level required to care for patients with ocular presentations.

Keywords: Ophthalmology, Ophthalmological conditions, Ophthalmological teaching, International Council of Ophthalmology Recommendations

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INTRODUCTION

Medical doctors, residents, specialists all come across patients requiring some form of eye care. They are required to scrutinize a diverse array of patient presentations with ocular signs as a first indication of a disease or a complication of disease process.[1]

Pakistan Medical and Dental Council, the statutory regulatory authority in the country, has published its curriculum of under-graduate medical program[2] which include a comprehensive and detailed Ophthalmology course. In addition the International Council of Ophthalmology has developed a set of principles and guidelines for Ophthalmology curriculum at under-graduate and residency levels[3].

The World Health Organization estimates that 285 million people suffer from some level of visual impairment[4] the majority of this population resides in under-developed/developing countries.

Investigations into the utility and effectiveness of under-graduate Ophthalmology training programs reveal that qualified doctors perceive the curriculum to be in-effective in preparing them to care for patients with ophthalmological conditions[5] irrespective of the time dedicated for teaching Ophthalmology to the undergraduates[6].

The majority of graduating medical doctors in Pakistan are registered as general practitioners[7], though a significant number of the total registered doctors, pursues a specialty career[7]. These doctors are entrusted to examine, assess, diagnose, treat and refer patients presenting with Ophthalmological conditions. Doctors that do enter a specialty training program are bound to see patients with ocular complications of systemic diseases. For example a resident training in general medicine is required to assess diabetic ocular complications or base a diagnosis of an auto-immune disease process on patient's ocular presentations. Similarly a surgical resident might come across a poly-trauma patient with ocular involvement. A doctor training to be a paediatrician will be required to examine to the fundus to look for papilledema in cases of meningitis. In all cases, be it a general practitioner or a post-graduate resident, the doctor will come across patients that require some level of eye care. How well the doctor is able to perform in this situation is reflected in the training offered at under-graduate level.

However no efforts have been made to investigate how comfortable our residents are in caring for these patients. Our study aims to find out if the under graduate curriculum in ophthalmology enables doctors to deal with ophthalmology related diseases in their practical life. In Pakistan most undergraduate medical students take ophthalmology course in their 4th year of under-graduate studies. After that they have minimal

exposure to ophthalmology unless they choose it as a specialty. This study would be useful in devising annual curriculum and schedule of undergraduate students

MATERIAL AND METHODS

The cross sectional study was conducted after taking Approval from the Institutional Review Board, Shifa International Hospital, Shifa Tameer-e-Millat University, Islamabad. A cross sectional survey was carried out over a period of six months to assess the knowledge and comfort level of medical graduates regarding ophthalmology related illnesses. Medical graduates working as residents in different specialties except Ophthalmology, in both private and public tertiary care hospitals in Rawalpindi and Islamabad were included in the study. Residents working in Pakistan Institute of Medical Sciences Islamabad (PIMS), Federal Government Services Hospital Islamabad (FGSH), Shifa International Hospital Islamabad (SIH), Benazir Bhutto Hospital Rawalpindi (BBH), Holy Family Hospital Rawalpindi (RGH), District Headquarters Hospital Rawalpindi (DHQ) and Combined Military Hospital Rawalpindi (CMH) were asked to participate in this study. Doctors from BBH, RGH and DHQ were grouped together as participants from Rawalpindi Medical College Allied Hospitals (RMC). We adapted a structured questionnaire based on International Council of Ophthalmology Recommendations[3] which inquired into the comfort and skill level of our participants, on a 5-point Likert scale, when caring for patients with Ophthalmological presentations.

Participants of the study were selected through consecutive non probability sampling. Using World Health Organization sample size calculator, keeping prevalence of somewhat comfortable or not at all comfortable level in managing ophthalmological conditions to be reported in Canadian study[3] to be 80%, confidence level 95%, absolute precision required 5% , a sample size of 246 was calculated. Written informed consent was obtained from all the participants. Participants were assured of confidentiality

Questionnaire was circulated amongst 400 doctors in identified hospitals. They were required to fill the questionnaire within a week, following which it was collected. Only fully completed questionnaires were counted as valid in which response to at least 10 variables was recorded. Two hundred and seventyseven questionnaires out of 400 questionnaires (69.25%) were considered valid and included in study.

Data was entered into SPSS version 21.0. Descriptive statistics were calculated. For Qualitative variables, frequency and percentage were calculated. For Quantitative variables, Mean±SD was calculated. Spearman Rank Order Correlation was us to determine the correlation of comfort level with hours of classroom and clinical teaching. *p*-value <0.05 was considered statistical significant.

RESULTS

Out of a total sample of 277, 42.0% (n=116) of the participants were from PIMS, 24.0% (n=66) from SIH, 18.7% (n=52) Rawalpindi Medical College, 8.6% (n=24) from FGSH and 6.7% (n=19) from CMH. Of the total, 96.3% (n=267) participants underwent undergraduate teaching in Pakistan while 3.7% (n=10) underwent training in China.

Majority of the Post-Graduate (PG) respondents were in their first year of residency (51.6%, n=143), followed by doctors in second (42.6%, n=118) and third (5.8%, n=16) years of residency respectively.

Mean teaching duration of classroom based and clinical ophthalmology instruction during undergraduate program overall was 59.38(55.9) and 62.73(60.8) hours respectively. Mean hours of classroom based and clinical ophthalmology training for PG Year 1, PG Year 2 and PG Year 3 are shown in table-2.

The overall comfort level of doctors while managing ophthalmology associated issues was as follows. Of all the respondents 28.5% (n=79) were not comfortable at all, 25.5% (n=71) were somewhat comfortable, 22.3% (n=62) were moderately comfortable, 15.5% (n=43) were comfortable while 8.2% (n=23) were very comfortable. Distribution of comfort level of managing ophthalmological cases has been illustrated in figure-1. Median response for management of specific ophthalmological condition has been shown in table-1. Median response for ophthalmological clinical skills is given in table-3.

Spearman Rank Order Correlation was used to determine the correlation of comfort level with hours of classroom and clinical teaching. The results were found to be statistically significant *p*-value <0.05.This is presented in table-4.

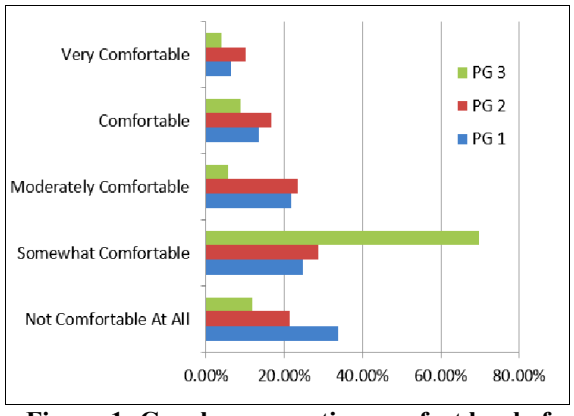

Figure-1: Graph representing comfort level of Post-graduate trainees in first, second and third year of training when managing eye patients.

Table-1: Comfort Level of Physicians regarding management of specific ophthalmological condition

Topic	PG1 n=143	PG2 n=118	PG3 n=16
Orbital / Lacrimal Apparatus/ Lids/ Lashes			
Proptosis	2	2	1.5
Orbital Cellulites	2	2	1.5
Ptosis	2	3	3
Preseptal Cellulites	2	3	3
Chlazion / Stye	3	3	3
Blepharitis	2	3	3
Conjunctiva / Sclera			
Dry Eyes	3	3	4
Conjuctival lesions	2	3	3
Conjuctivitis	3	4	4
Episcleritis	3	4	4
Subconjunctival haemorrhage	2	3	4
Cornea			
Corneal Abrasion	2	2	2.5
Corneal ulcer	2	2	2.5
Herpetic Keratitis	2	2	2.5
Recurrent corneal erosions	2	2	2.5
Corneal foreign body	2	2	2.5
Contact lens related issues	2	2	2.5
Neuro-Ophthalmology			
Anisocoria	1	1	1
Relative Afferent Pappillary Defect	1	2	2
Visual Field Defects	2	3	2
Diplopia	2	2	2
Optic Disc oedema	2	2	2
Optic Neuritis	1	2	1.5
Uveal Tract			
Iritis	2	2.5	2
Paediatric Ophthalmology			
Strabismus	2	2	1.5
Leukocoria	1	1	1.5
Amblyopia	1	1	1.5
Lens			
Cataract	2	2	1
Retina & Vitreous			
Posterior Vitreous Detachment	1	2	1.5
Vitreous Haemorrhage	1	2	1.5
Central retinal artery/vein occlusion	1	2	1.5
Age-related macular degeneration	1	1.5	2
Retinal Detachment	1	1	1
Glaucoma			
Primary open angle glaucoma	2	2	2
Acute angle closure glaucoma	2	2	2
Ocular Manifestations of Systemic Disease			
Thyroid Ophthalmology	2	3	2.5
Diabetic Retinopathy	3	3	2.5
Hypertensive Retinopathy	3	3	2.5
Amaurosis Fugax	2	3	2
Myasthenia Gravis	2	3	2.5
Autoimmune Diseases	2	3	2
Ocular Trauma			
Globe rupture	1	2	2
Chemical burn	2	2	2.5
Hyphema	1	2	2
Blowout fractures	1	2	2
Endopthalmitis	1	2	2.5
Medications			
Topical NSAIDs	2	3	2.5
Topical Steroids	2	3	3
Anti-glaucoma Medications	2	3	3
Topical Anti-infective medications	2	3	3

Table-2: Mean clinical and class teaching hours in ophthalmology in under-graduate ophthalmology program as reported by Post Graduate Trainees in first, second and third year of training

Year of Post graduate Training	Ophthalmology Mean hour of clinical based ophthalmology (in Hours±SD)	Mean hour of classroom based Ophthalmology (in Hours ±SD)
PG Y1	43.14 (±39.928)	51 (±58.731)
PG Y2	82.00 (±66.694)	76 (±62.351)
PG Y3	37.00 (±25.076)	73 (±46.975)

Table-3: Median Comfort Response among Physicians regarding Ophthalmological clinical skills

Parameter	PG1	PG2	PG3
Clinical Assessment			
Ophthalmological History taking	4	4	4.5
Visual Acuity	4	4	4
Pupil Exam	4	3	3.5
Cover and uncover test	3	3	3.5
Colour vision	4	4	3
Visual Field	4	3	3.5
Interpretational Fluorescent staining	3	2	1.5
Direct Ophthalmology			
Tonometry	2	3	1.5
Extra-occular movement	3	3	4
Investigations			
Ordering	3	3	4.5
Full Blood	3	3	4.5
Orbital	3	3	2.5
Carotid	2	2	2.5
Echocardiogram	2	3	4
Medical			
Antibiotics	3	4	4.5
Steroids	3	4	4
Prescribing Medications	2	3	3
Referral	3	3	5
Procedure	2	3	3
Care	2	3	4
Vitrectomy	2	3	3.5

Table-4: Correlation of Comfort Level of Postgraduate Trainees with Hours of Classroom Based and Clinical Teaching

Teaching Hours	Comfort Level of Postgraduate Trainees	
	Correlation Coefficient	Significance
Hours of class room based ophthalmology teaching in medical school	.577	.000
Hours of clinical ophthalmology teaching in medical school	.786	.000

DISCUSSION

Ophthalmology is being taught as a compulsory subject in all medical colleges of Pakistan affiliated with Pakistan Medical and Dental Council (PMDC), which is the governing body for medical institutes in the country. Clinical exposure to ophthalmology is part of the curriculum during the 4th year of MBBS whereas students study basic sciences regarding the subject in the first three years. The International Council of Ophthalmology serves as the prime body

of instruction for making curricula for medical institutions. According to it, medical students must have a clinical exposure of 40–60 hours during their undergraduate education.[3]

In compliance with international guidelines, the PMDC[2] has set a requirement of 70 hours of clinical exposure for students in their fourth year of MBBS. Classroom based study should be 30 hours, stretched over the first three years of basic sciences education. This makes a total of 100 hours of ophthalmology education in the five year course. The PMDC has also specified the objectives and competencies a 4th year medical student should have learnt by the time he or she appears for Professional exams. Various pedagogical tools are acquired to deliver the educational content and assessment is based on both theory and practical implementation of knowledge.

According to the results of the study, the amount of time spent on classroom-based ophthalmology instruction in the study population was satisfactory and averaged 59.38 hours. Mean hours of clinical-based ophthalmology instruction overall was 62.78 hours. These results are depictive of an adequate exposure to both classroom and clinical based education, superseding the requirement set by PMDC[2] and International Council of Ophthalmology.[3] One can assume that given the good exposure, students would be confident in dealing with ophthalmic conditions.

However the results of the survey show that 23.7% of the participants were either comfortable or very comfortable in managing ophthalmology associated issues. Majority of the postgraduate trainees (54%) were either not comfortable or somewhat comfortable. A similar study done in Canada found out that about 80% of the resident felt "somewhat comfortable or not comfortable at all" in managing ophthalmology conditions (3).

Median responses showed that the only ophthalmological conditions, PG trainees felt comfortable (Likert scale value 4) in managing were dry eyes, conjunctivitis, episcleritis and subconjunctival haemorrhage. No PG year1 had a median response of 4 or more (comfortable and very comfortable) in handling any ophthalmological condition asked in the questionnaire. PG year 1 felt moderately comfortable or less in managing ocular conditions. The median of lowest comfort level (not comfortable at all) seen in all PG participants was in the management of anisocoria and retinal detachment.

The median score for management of chalazion/stye and conjunctivitis, which the PMDC enlists as common eye diseases whose management can be done without the involvement of tertiary healthcare, ranged from moderately comfortable to comfortable. Serious emergency conditions which cause a threat to vision including acute angle closure glaucoma and retinal haemorrhage had low median scores. In a similar study done in Iran[8] regarding comfort level, only 9% were satisfied with the training on management of glaucoma. Conditions listed by PMDC as requiring first aid management and referral in time, e.g. corneal ulcer, uveitis, red eye and open and closed globe injuries, had scores of 1 to 2.5. Participants were somewhat comfortable and moderately comfortable in prescribing medicines.

Median scores for history taking, visual acuity and examination of colour vision were high. Low scores were seen in interpretation of fluorescent staining, tonometry and investigation for carotid artery. PG year 3 reported high scores of 4.5 or more in history taking, ordering investigations and interpreting full blood count, prescribing antibiotics and referral. Emphasis should be placed on certain ophthalmological clinical skills with scores of 3 or less throughout all PG trainees which are listed by PMDC as competencies of a MBBS doctor. These skills include interpretation of fluorescent screening, tonometry, prescribing medications and performing medical procedures. A longitudinal study done in California concluded that 88-90% students were able to assess acuity, pupil, duction and fields.[9]

Our results show that PG year 1 trainees, who constituted almost half of the study population, are not comfortable in handling common eye conditions, which are otherwise required to be diagnosed and treated on a primary care level and do not require referral. It is also important to highlight conditions which require first aid management and referral and the low level of comfort prevalent in dealing with them amongst all participants. Good first aid management can play an important role in limiting the severity of the disease.

Though PG year 1 trainees met the requirement of International Council of Ophthalmology, they fell short of the PMDC recommendation, averaging 51 hours of clinical-based education in contrast to the recommended 70 hours. We postulate this to be one of the reasons for the lack of high median scores in managing ocular conditions by PG year 1. Though clinical-based education of PG year 2 and PG year 3 was 76 and 73 hours respectively, they were also less comfortable in managing common ocular conditions, we recommend much more emphasis on clinical exposure during the 4th year of training. A study done in Canada concluded that a large proportion of medical students were not confident in various aspects of their skill in performing direct ophthalmoscopy. Our study had similar result. They also found out that Self-

confidence was significantly greater among students who had practiced outside of formal teaching sessions[10].This can include more supervised interaction with patients in terms of history taking, performing clinical examinations and minor medical procedures, ordering investigations and prescription writing. Moreover revising pedagogical tools used in the process of both classroom and clinical-based education, in the light of technological advancements, have the potential to improve and enrich learning experience.[11,12] A study done on three groups of British doctors concluded that emphasis should be given during undergraduate studies on topic which will help identify the sight threatening eye conditions, primary eye function of recognition and management of common external eye disorder.[13] The comfort level in our study was found to be significantly associated with hours of classroom and clinical teaching during undergraduate studies. Similar results were found in a study done in Canada.[6]

We could not collect data from Medical officers and General Practitioners in private practices as most of them refused to participate. Secondly, due to lack of any postgraduate training centre in the domain of Family Medicine in this region, data is limited in this regard.

CONCLUSION

The quality of under-graduate Ophthalmology teaching needs to be reviewed. Despite allocation of a generous number of teaching hours, most qualified doctors do not feel comfortable handling patients requiring Ophthalmological care.

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AUTHOR'S CONTRIBUTION

All the authors contributed equally to the preparation of manuscript.

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