

## An Innovative Model to Paediatric Ophthalmology Training in Developing Countries - A “Sandwich Fellowship”

Suma Ganesh<sup>1</sup>, Sethu Sheeladevi<sup>2\*</sup>, Kalpana Gupta<sup>1</sup>, Rishi Raj Borah<sup>2</sup>, Clare Szalay Timbo<sup>2</sup>, Amelia Geary<sup>2</sup>, Hunter Cherwek<sup>2</sup> and Umang Mathur<sup>1</sup>

<sup>1</sup>Dr Shroff's Charity Eye Hospital, New Delhi, India

<sup>2</sup>Orbis International, Haryana, India

**\*Corresponding Author:** Sethu Sheeladevi, Orbis International, Haryana, India.

**Received:** January 25, 2023; **Published:** February 18, 2023

### Abstract

This paper presents the results of the feasibility of a one-year blended model of the traditional two-year paediatric fellowship in ophthalmology.

A blended course was developed with the aim of training paediatric ophthalmologists in a relatively short duration with no requirement for long periods away from home and without compromising the hands-on experience that they normally receive in traditional training program. Two female ophthalmologists participated in this pilot. Both successfully completed the fellowship and assessment were done as per the requirements of The International Council of Ophthalmology Ophthalmic Clinical Evaluation Exercise (ICO-OCEX) and the surgical skills were assessed using the ICO Ophthalmology Surgical Competency Assessment Rubric (ICO-OSCAR).

This pilot demonstrates the feasibility of a blended program for paediatric ophthalmology, without the need for long periods away from home, and with likely future benefits for those unable to relocate due to family responsibilities, costs or other factors.

**Keywords:** Paediatric Ophthalmology Training; International Council of Ophthalmology Ophthalmic Clinical Evaluation Exercise (ICO-OCEX); ICO Ophthalmology Surgical Competency Assessment Rubric (ICO-OSCAR)

### Introduction

Inequities persist in the global systems of eyecare provision. These include the relatively large number of ophthalmic practitioners per head of population in cities compared with more rural locations. The latter is not easily solved, but efforts to alleviate these disadvantages are important. They are entrenched by stereotypes deeply embedded in societies, and are exacerbated in some cultures, but are global problems which prevent highly skilled people from making equal, valuable contributions to clinical, research and management aspects of eye health. The eye health workforce needs to be not only expanded but also redistributed and levelled to ensure that all practitioners are equally able to contribute to eye health [1,2].

The coronavirus 19 (COVID19) pandemic with a need for social distancing and a lack of elective care has made the acquisition of clinical skills challenging and in some cases impossible [3]. Female professionals have been more acutely affected than their male counterparts

by this situation, since they are more likely to take responsibility for domestic labour, childcare and home schooling [3]. This means that they are less likely to face barriers to attendance of professional development courses away from home. Online platforms such as the Orbis Cybersight programme [4] are potential enablers for equitable access to such courses. Orbis International has developed a “sandwich” paediatric ophthalmology fellowship based in part on this programme and including a range of training modalities to overcome the common barriers to medical education faced by ophthalmologists who cannot spend long periods away from home and those working in low- and middle-income countries, including costs, lack of infrastructure and supportive mentoring. This paper presents the results of a pilot project to test the feasibility of a one-year blended model of the traditional two-year paediatric fellowship without compromising clinical experience and with achievement of the desired outcomes.

**Methods**

A blended course was developed with the aim of training paediatric ophthalmologists in a relatively short duration with no requirement for long periods away from home and without compromising the hands-on experience that they normally receive in traditional training program. The content and structure of the course is shown in table 1 and is based on input from paediatric ophthalmology trainees and educators. The course includes four 3-month rotations, so is of one-year duration.

Rotation*	Training location	Learning methods	Major topics	Assessment
1 <sup>st</sup> rotation	Host institute	Online lectures in Cybersight	Fundamental courses: 1. Pediatric Ophthalmology and strabismus; 2. MSICS; 3. Phaco - performing cases at their host institution to become eligible for undergoing sandwich training in peds	Online quiz  eLearning certificates for 12 online courses in peds ophthal and strabismus Cybersight module  Requirement of attending webinars posted in peds and strabismus and neuro-ophthal in Cybersight
2 <sup>nd</sup> rotation	Training Institute	Observation in OPD; Pediatric work up in OPD and diagnostics;	1. Vision assessment in children (age appropriate) 2. Refraction in children with squint and RE and in children with aphakia and pseudo aphakia; 3. Auto keratometry, A scan under GA and Applanation tonometry 4. Amblyopia, Low vision management and strabismus workups	Expected no of cases to be observed/performed vs Actual no of cases observed/performed under each category; ICO OCEX
		Wet lab training;	1. Perform MR recession and LR resection; 2. Perform IR recession and resection; 3. Perform SR recession and SR resection; 4. Perform capsulorhexis	Grading by the mentor
		Observation in OT and Assisting and performing few steps in surgeries;	Squint surgeries; Pediatric cataract and transposition surgeries	Expected no of cases to be observed/performed vs Actual no of cases observed/performed under each category; ICO OCEX

3 <sup>rd</sup> rotation	Host institute	Online lectures in Cybersight, webinars (remote classes);	1. Low vision in children and management; 2. Prism in children and adults; 3. Re-operative cases; 4. Paralytic squints; 5. Nystagmus; 6. IO Surgeries; 7.DVD surgeries; 8. SO surgeries; 9. Transposition surgeries	Online quiz
		Hospital based training programs (HBT);	Squint and pediatric cataract surgery	ICO OSCAR
		Performing surgery under supervision onsite and remote surgical mentorship by the trainer at the training institute	Horizontal strabismus; Transposition surgeries; pediatric cataract surgeries	Expected no of cases to be observed/performed vs Actual no of cases observed/performed under each category; ICO OSCAR score
4 <sup>th</sup> rotation	Training Institute	Observe and Perform surgeries	Perform surgeries - horizontal squint; vertical squint; oblique surgeries; transposition surgery and pediatric cataract; BOTOX in squint	Expected no of cases to be observed/performed vs Actual no of cases observed/performed under each category; ICO OSCAR score
*Each rotation is for 3 months				
Trainees are expected to attend the lectures either in person or online related to pediatric ophthalmology organised at the training institute and encouraged to present selected topics during the training.				
BOTOX = Botulinum Toxin; DVD = Dissociated Vertical Divergence; GA = General Anaesthetic; ICO OSCAR = International Council of Ophthalmology [Ophthalmology] Surgical Competency Assessment Rubric; ICO OCEX = International Council of Ophthalmology Ophthalmic Clinical Evaluation Exercise; IO = Inferior Oblique; LR = Lateral Rectus; MR = Medial Rectus; MSICS = Manual Small Incision Cataract Surgery; OPD = Outpatient Department; RE = Refractive Error; SR = Superior Rectus				

**Table 1:** Structure of the Sandwich pediatric ophthalmology fellowship program.

Ophthalmologists meeting the following criteria are eligible to join the course:

- Completed all manual small incision cataract surgery (MSICS) and phacoemulsification (Phaco) courses offered on Cybersight;
- Completed at least 100 adult MSICS cases (self-reported);
- Minimum 2 years of adult ophthalmology experience;
- Demonstrated need for pediatric ophthalmology specialization in the host institute (assessed by Orbis);
- Local mentor available during the training at host institute;
- Video camera for the mentor to view the surgery to facilitate remote surgical mentorship.

The International Council of Ophthalmology Ophthalmic Clinical Evaluation Exercise (ICO-OCEX) [5] was used to assess each participant’s communication, interpersonal and clinical skills. Participants in this pilot were asked for qualitative feedback on the benefits of the

programme from their perspective. In addition, the ICO Ophthalmology Surgical Competency Assessment Rubric (ICO-OSCAR) [6] was used to assess participants’ paediatric cataract surgery skills and paediatric strabismus surgery skills.

### Results

Two female ophthalmologists participated in this pilot. Both successfully completed the fellowship, underwent assessment as described above and provided feedback on the programme. Figure 1 and 2 show the results of ICO-OCEX and OCO-OSCAR (strabismus surgery) evaluations.

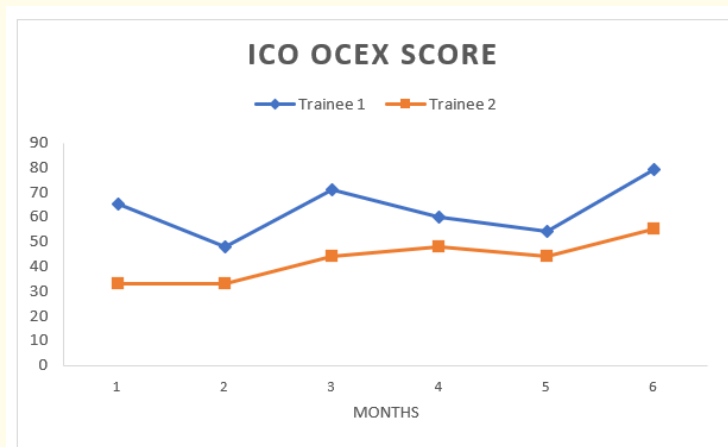


Figure 1: Performance score related non-surgical tasks using ICO-OCEX score.

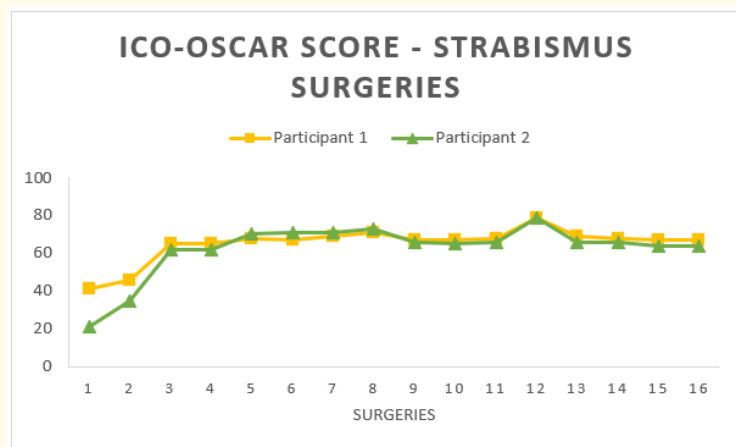


Figure 2: Performance score related surgical tasks using ICO-OSCAR score.

After course completion, participant 1 reported that the fellowship was ‘...really a great experience, Sandwich technique helped me pursue fellowship and achieve great skills in a short period of time. We have to be focussed as during the short time many courses and skills we have to completed but I really enjoyed that.’ Participant 2 reported: ‘I was very fortunate to have the opportunity to take part in the ... sandwich fellowship program. This programme really helps us develop our paediatric ophthalmology and strabismus department ... [to] treat our patients, [and] transfer [our] knowledge ...’.

Participant 1 also commented “The short-term training [was] sufficient to make a good start but the main factor thereafter was sufficient number of patients and opportunity at the home Institute to take further steps”, indicating that more opportunities to manage paediatric patients after the course, on returning to their regular workplace, would be helpful to build on the learning.

An external consultant advised that “You can have a 30 - 45 min discussion with the [graduated] trainee every 15 days for 3 months with the faculty of your centre (over a zoom call/webex call). This can be a dedicated coaching session- where the trainee can discuss his own [clinical/surgical] cases and ask for faculty input- it will build participant confidence in the real world”. This suggestion aims to continue the learning via distance coaching for three months after graduation.

From participant 2: “In my opinion, if a person joins [the course] immediately after MD/MS Ophthalmology, it will be difficult to grasp and acquire the knowledge and skill in 6 months; a fresh [graduate] will need at least 1 year [of clinical experience]. But for those who have been doing phaco surgeries confidently and bit of squint surgery, 6 months would be OK.” This comment indicates that it is important for candidates for this model to have at least one year of clinical experience including phacoemulsification and squint surgeries.

The same participant stated that “The 6 months fellowship was worth [while] in my case, considering the manpower situation of the hospital. I [completed] enough cases to [work] independently” indicating that, at least for this participant, the two 3-month rotations included sufficient clinical experience to gain the competence needed to work without supervision.

### Discussion and Conclusion

The results of this pilot course indicate that it is feasible for a paediatric ophthalmology fellowship to be completed in one year with a combination of online learning and reduced face to face clinical teaching. Lectures were available online and only two three-month rotations involved attendance at a training institution. This helps to remove some of the barriers to participation in ophthalmology specialist training, such as rural location and gender. For example, female ophthalmologists with primary child-care responsibilities are likely to find that the short duration with reduced requirement for time away from home facilitates their participation and their ability to gain this qualification.

The course format piloted in this study has the potential to address some of the challenges faced by women in ophthalmology pursuing career advancement and leadership. By providing access to mentorship, leadership skill development and flexible learning opportunities it may create sustainable resources for generations of female eye health professionals, will be available globally and open-sourced through the Orbis’ tele-education and mentorship platform, Cybersight.

The candidates in this pilot were asked for their feedback, which will form the basis of further course development. For example, the course leaders plan to limit entry to candidates with significant clinical experience, wishing to specialise, rather than recent ophthalmology graduates.

In comparisons between the present model and the traditional 2-year fellowship, it should be noted that the former includes candidates with extensive experience of cataract surgery, while candidates with little or no such experience are eligible to join the latter. Thus, skill levels of graduates from the 1-year course are developed from a relatively high baseline.

This pilot demonstrates the feasibility of a blended program for paediatric ophthalmology, without the need for long periods away from home, and with likely future benefits for those unable to relocate due to family responsibilities, costs or other factors. The feedback gained from the pilot and from future iterations will be used for its further and ongoing development.

### Bibliography

1. Christina Mangurian EL., *et al.* “What’s Holding Women in Medicine Back from Leadership”. *Harvard Business Review* (2018).
2. Khan H and Moosajee M. “Facing up to gender inequality in ophthalmology and vision science”. *Eye* 32.9 (2018): 1421-1422.
3. Julia Boorstin HT. “How coronavirus could do real, long-term damage to women’s careers”. *CNBC* (2021).
4. Cybersight online courses (2022).
5. Golnik KC., *et al.* “The ophthalmic clinical evaluation exercise (OCEx)”. *Ophthalmology* 111.7 (2004): 1271-1274.
6. Badakere A., *et al.* “OCO-OSCAR scoring for pediatric cataract surgeries performed by pediatric ophthalmology fellows in training - stage of fellowship and quality of surgery”. *Journal of American Association for Pediatric Ophthalmology and Strabismus* 21.1 (2021): e99.

**Volume 14 Issue 3 March 2023**

**©All rights reserved by Suma Ganesh., *et al.***