

Practical use of rubric for assessment of eye bank professionals for eye retrieval and its role in improving eye retrieval process in eye banks: An Indo-American experience

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Purpose: To study the practical use of the Rubric for Assessment of Eye Bank Professionals for Eye Retrieval (RAEPER) as a competency assessment tool by organizing a workshop in two eye banks – one in India and other in America. **Methods:** Two-day workshop was conducted in two eye banks – named Shroff's Charity Eye Hospital (SCEH) in India and Miracles in Sight (MIS) in America. Day 1 of workshop comprised of didactic lectures and discussions and day 2 was eye retrieval assessment done on human eyes in a wet lab setting. Assessment was done using RAEPER by two independent senior eye bank managers. **Results:** MIS had 27 participants, 15 males and 12 females (mean age: 38.8 years, range: 28-55) and SCEH had 11 participants, 10 males and 1 female (mean age: 48 years, range: 22-68). All participants were in house technicians, who had a minimal experience of at least 150 eye retrievals. At MIS, step 19 (crystalline lens check) got a score of 3 (Competent) 93.5% of the time. At SCEH, step 6 (conjunctival removal) and step 4 (Irrigation of cornea with sterile saline) were high scoring with 90.11% and 72.7% scoring 3, respectively. **Conclusion:** India's cornea blind population is expected to reach 10 million by 2020. Steps need to be taken to improve cornea retrieval rates in the country and make various eye banks self-sufficient. Incorporating such training modules not only improves the cornea utilization rates, but also helps standardize the entire eye banking process.

Key words: Competency, cornea, eye bank, rubric, training

Treatable corneal blindness is among the top three causes of preventable blindness in the developing world^[1] and it is imperative to find long-term solutions to this problem. A significant barrier to this remains scarcity of corneal tissues available for allograft.^[2] With middle income countries like Brazil, Iran and specially India showing promising developments in tissue procurement in the past few years,^[3,4] we need to have systems in place to make use of the situation at hand. India's donation rate is projected to surpass its internal needs in the near future^[2] and this calls for a nationwide upgradation of eye banks to be prepared to use the tissues effectively and efficiently.

Various steps have been taken to standardize eye banking throughout India. It's been proposed to have four regional eye banks and one national training facility across India.^[5] Training methodology needs to be formulated and implemented nationally to achieve better utilization rates. In this regard, our group had earlier discussed about quality indicators in eye banks, as part of quality assurance program of eye banks.^[6] We have also formulated a rubric for assessment of eye bank technicians (RAEPER- Rubric for Assessment of Eye Bank Professionals for Eye Retrieval),^[7] which can be used as a training or annual competency assessment

tool. This rubric is based on the International Council of Ophthalmology -Ophthalmology Surgical Competency Assessment Rubric (ICO-OSCAR) pattern^[8] and is aimed for assessing trainees and being an educational tool. It can be used on-site or in a simulated "wet-lab" scenario; and the assessor can grade the assessed as being a novice, beginner, or competent. The detailed rubric has been described earlier.^[7]

In the current study, we are presenting results of using the rubric in a wet lab at one national (India) and one international (United States of America; USA) eye bank. The rubric was used as a part of our annual skill assessment program, where the eye bank manager scored eye bank technicians in a wet lab on various steps of corneal rim retrievals.

Methods

Study design, setting, participants, and approval

This prospective, nonrandomized, comparative study adhered to the tenets of the Declaration of Helsinki and was exempted from institutional review board approval. Two eye banks were identified to participate; one was our in house eye bank in India,

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named SCEH and the other was our partner eye bank in USA, named MIS. Both are active eye banks with annual procurement rates of more than 1200 per year.

As a part of annual competency assessment, a two-day workshop was conducted at SCEH with MIS in January 2019. Day 1 of workshop comprised of didactic lectures, discussions, and educational videos and day 2 was eye retrieval assessment done on human eyes in a wet lab setting. Corneas, derived from whole globes, not suitable for therapeutic transplantation were made available by the respective eye banks for the workshop. Assessment was done using RAEPER by two independent senior eye bank managers with more than 10 years of experience in eye banking and in training technicians. The scoring was done using the rubric, as described earlier.^[7]

Data collection and statistical analysis

Results from both the eye banks were recorded on a Microsoft® Excel Spreadsheet and compiled. Statistical analysis was carried out using SPSS statistical software (SPSS version 21. Inc., Chicago, IL, USA). Statistical significance was defined at a level of 5% ($P < 0.05$).

Results

Two simultaneous workshops were conducted at the two eye banks- MIS in USA and SCEH in India. MIS had 27 participants, 15 males and 12 females (mean age: 38.8 years, range: 28–55) and SCEH had 11 participants, 10 males and 1 female (mean age: 48 years, range: 22–68). All participants were in house technicians, who had a minimal experience of at least 150 eye retrievals [Table 1].

At both the eye banks, none of the participants scored 1 (Novice). Most participants scored 2 (Beginner) in majority of the steps at both eye banks. At MIS, step 19 (crystalline lens check) got a score of 3 (Competent) 93.5% of the time. Similarly, step 11 (Discard of forceps and blade used for conjunctival scraping) got three 45.5% and step 3 (gloving) got three 45.16% of the time. At SCEH, step 6 (conjunctival removal) and step 4 (irrigation of cornea with sterile saline) were high scoring with 90.11% and 72.7% scoring 3, respectively. At both eye banks, participants fared poorly in step 15 (AC maintained), with 12% of participants scoring 3 at MIS and 9% of participants scoring 3 at SCEH.

Comparing performance of participants in both eye banks, MIS participants scored significantly better than SCEH

participants in step 9 (incision through sclera) ($P < 0.0001$) and step 16 (ciliary body separation from scleral spur) ($P < 0.0001\%$).

Discussion

Eye banking has come a long way from the early years when Filatov^[9] started using moist chamber for enucleated donor eyes in 1935, to McCarey and Kaufman^[10] using modified tissue culture medium in 1974. Ophthalmologists across the globe realize the importance of integrating eye banking with clinical practice to maximize outcomes. Encouraging work has been done and several milestones reached over the years in form of Eye Bank Association of America taking initiatives in promoting programs for training and certification of eye bank technicians in the year 2000^[11] to global bioethical framework in the form of Barcelona Principles in 2018.^[12]

With so much being done globally, we wonder, is India doing enough? India's role is important because its corneal blind population is expected to reach 10 million by 2020,^[13] one of the highest anywhere in the world. India has been described as an "Eye Bank ready"^[14] country, but most of the work is still being predominantly done by a handful of eye banks. A total of 75% of the annual collection is done in five central and south Indian states,^[14] and shockingly none of the Eye Banks from the whole of north India makes it to the list. Our aim is to modify this and have more uniform national distribution of eye banks with underserved populations benefitting the most from facilities available.

One way of doing this is through training personnel and standardizing protocols. Pineda, in his keynote address in *Cornea* journal in 2015, talks about lack of trained staff and inefficient operations as major barriers to the function of a successful eye bank.^[4] This, no doubt is very important, but at the same time, amendable. The purpose of formulating the rubric is a step in this direction. We see the rubric being integrated in the training manual of all eye banks and should be part of a training kit given to every new recruit who will be performing eye retrieval. It can be used by eye bank managers/ medical directors to evaluate the technician (or ophthalmology resident in few setups) on field or in wet labs. Annual or bi annual competence assessments can be planned using this rubric. Also, small-group workshops can be conducted where eye bank technicians can be invited from other centers for training and in the end assessed using this rubric.

We are in communication with Eye Bank Association of India (EBAI) and are planning for a workshop to include at least one eye bank from each zone (north, south, east and west) to train and evaluate technicians. This paper gives us an assessment of which steps to focus more on and which steps the technicians would be comfortable with. Also, records should be maintained and comparisons made for the same trainee after 1 year of the initial assessment, to document progress.

We tried comparing the performances of participants of both the eye banks. MIS fared better than SCEH in most of the steps, and the results were significantly better in two aforementioned steps. There could be a bias in our assessment as the trainers were different and scoring was done in different settings, with different training backgrounds of technicians. The results would have been more standardized, if the assessor had been same (which was logistically not possible) or the participants had a uniform training pattern. Also, interestingly, SCEH

Table 1: Comparative data of the two eye banks

Characteristics	Eye Bank in USA	Eye Bank in India
Number of participants	27	11
Male:Female	15:12	10:1
Mean age in years (range)	38.8 (28-55)	48.0 (22-65)
Minimum eye retrievals	150	150
Most consistently high scoring step	Step 4 (irrigation of cornea with sterile saline)	Step 19 (crystalline lens check)
Most consistently low scoring step	Step 14 (leakage of vitreous)	Step 14 (leakage of vitreous)

had only one female technician, probably because of cultural reasons. This can be overcome by spreading awareness about eye donation process and making training programs more accessible. These points should be kept in mind while structuring further studies.

Conclusion

Incorporation of the RAEPER rubric by the eye banks as a training and assessment tool to credential technicians may help create a uniform training standard, and lead to better recovery and improved utilization rates. It is small steps like these that will help India to improve its current cornea utilization rate of 46%^[4] and reach the annual transplant target 100,000.^[15]

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Conflicts of interest

There are no conflicts of interest.

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