Training Program of Para Medical Ophthalmic Assistants for Enucleation Procedure Our Experience

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Abstract: Background and Objective: Training of paramedical ophthalmic assistant (PMOA) for enucleation procedure will help to breach the gap of corneal deficit for eliminating corneal blindness. This study aims to assess the gains from skill based training for enucleation procedure. Methods: 33 paramedical ophthalmic assistants took enucleation training scheduled for 2 weeks at a teaching institute in South Gujarat. Training involved various teaching aids and practical sessions. Pretest and post tests were conducted through pretested questionnaire. Focus group discussion (FGD) was also done. Data were entered in MS Office Excel 2007. Results: Amongst 33 participants, 32 were above 45 years. Approximately 90% were male. Majority (73%) were posted at district /sub district hospitals. The paired pre-test and post-test average scores were 68.13 and 81.25 respectively, difference being statistically significant (P =0.002163). There was significant improvement in knowledge regarding eye donation procedure, eye bank activities and importance of blood sampling. Areas where there was further scope of improvement were donor information collection, knowledge about prerequisites and contraindications of enucleation. FGD showed participants were satisfied with training; however surgical supervision was needed for initial cases before doing enucleation independently. Interpretation and Conclusion: The current training of enucleation procedure leads to skills and capacity building of health workers. This will pave the path to curb corneal blindness. [S Patel, Natl J Integr Res Med, 2018; 9(1):98-102]

Key Words: Enucleation procedure; eye donation training; ophthalmic assistant; training module

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Introduction: Corneal diseases stands after cataract and glaucoma, as a major causes of blindness in the world, according to World Health Organization reports[1] .India has the world's largest corneal blind population, the estimated population being 120,000 and addition of 25,000-30,000 corneal blindness cases per year according to the National Programme for Control of Blindness(NPCB)[2,3].Corneal transplantation is a boon for visual rehabilitation of corneal blind patients[4].And to meet this large number of corneal blindness, there is an increased demand of procuring more and more corneas through eye donation.

The lack of trained personnel, especially in peripheral areas, who can carry out enucleation, is a big challenge to meet hands with increasing cornea demand. Time of collection of eyeball is another crucial factor for outcome of transplantation[5]. Mobilization of team from tertiary care centers with eye bank facilities will increase the time span of collecting eyeball after receiving eye donation call from peripheral areas. Paramedical ophthalmic assistant (PMOA) are pillars of primary eye care facilities in rural area and training them for eye donation procedure will not only retrieve more corneas but also spread awareness about eye donation . To achieve this, NPCB guidelines mentions enucleation be done at primary health centre (PHC) by PMOA [6] .

Following the NPCB guidelines, Government of Gujarat organized a pilot project of training of PMOA at identified government medical colleges and tertiary care centre. Our centre was selected to train PMOA from South Gujarat and few parts of Central Gujarat.

We decided to evaluate our training in terms of knowledge acquisition and skill transfer. In today's scenario , there is a need to re-examine the status of training and strategic changes to be made in it , due to phenomenal increase in human resources in health sector[7] .Supervision, monitoring and feedback of trainings given to health care providers helps to achieve desired status of health system and care delivery.

The objective of this study was to assess the gains from skill based training for enucleation procedure through pre and post test training evaluation and focus group discussion (FGD). The efforts of this study will help us to improve the corneal transplantation program and bring light to blind eyes.

Methods: Eye donation procedure training of PMOA includes training not only for enucleation procedure (i.e. removal of eyeball from cadaver) but also imparting education about various aspects of eye donation because they need to satisfy many questions from relatives. Any wrong message from primary eye care providers leaves a negative impact and strengthens the misconceptions about eye donation prevalent in the society. The Institutional Research Council and Ethics committee approval was waived as the study was based on training program conducted by the government and it was beneficial for the participants.

Ophthalmic assistants who were posted for enucleation procedure training were included in the study. All trainees were qualified as "Bachelor in Optometry". The study was conducted from August 2014 to September 2015 whereby 33 PMOA from medical colleges, district/ sub district hospitals and community health centers (CHC) took training. Total 11 such training sessions were done with 2 to 4 trainees per batch. The training was conducted by Ophthalmology Department at Government Medical College of South Gujarat under NPCB activity as per directions by Department of Health and Medical Education, Gujarat. The training duration was of 15 days.

The participants were first oriented to eye bank area. Training module, prepared by our faculties, as a part of this pilot project covering various aspects of enucleation procedure was given to the trainees for reference and revision. They were trained for eye donation by various educational tools like audio visual presentation and group discussions by faculties of the department. Arrangements were made with other eye bank so all eye donation calls were diverted to our eye bank .This made possible for all trainees to observe, assist and also perform enucleation under supervision of an expert. Blood sample collection training was incorporated as sampling in cadavers needs to be performed mandatorily. As a part of this they were posted in blood collection centre of the hospital for one day.

A questionnaire, with both open and closed ended items, was framed to assess the gain in information and knowledge required to perform enucleation. Both pre and post assessment tools were same with pre decided response items. The trainees were given self administered questionnaire which had 16 questions related to basic knowledge of eye anatomy and eye donation, information to be collected on receiving a phone call for eye donation, prerequisites, documents to be assessed, ideal time of enucleation from death, importance and investigations of donor blood sample, indications and donor related contraindications of corneal transplantation, confidentiality issues, transport method of donated eyes and activities conducted by an eye bank. Most questions were multiple choice types. Participants were instructed to write their initials only on questionnaire however during analysis anonymity was maintained. There were no dropouts in training.

Correct response was scored 3, Partial knowledge as 2, incorrect response as 1 and no response as 0.Total score of individual participant in pre and post test was done which was out of 48.Score of more than 35 was desirable. Total score of each question was done which was out of 99. For explaining our results we considered a score of above 80 as a good outcome.

FGD was also done with 10 participants. We asked them about their training experience, usefulness of module and their ability to perform the procedure independently.

Statistical Analysis: Data were coded, entered in MS Excel and analyzed with SPSS software. Paired t test was applied for testing statistical significance. p value of less than 0.05 was considered as statistically significant.

Results: Participants' Profile: Total 33 PMOA were trained for enucleation procedure. Majority of participants (97%) were above 45 years. Approximately 90% participants were male. 40% participants were from Surat district. Majority of them (73%) were posted at district / sub district hospitals. [Table 1]

Figure 1: Box plot showing results of pre test and post test.(*t value = -5.023, P value =0.000**)**

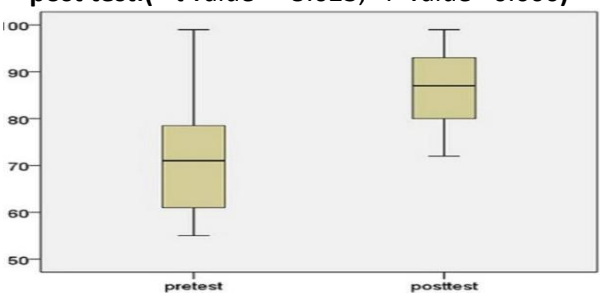

Table 1: Profile of participants

Parameter	Number of participants (%)
Age(years)	
<30	1(3.03)
>45	32(96.97)
Sex	
Female	4(12.12)
Male	29(87.88)
District wise posting area (5 districts of Gujarat state)	
Bharuch	6(18.18)
Surat	13(39.39)
Tapi	5(15.15)
Vadodara	7(21.21)
Chotta Udaipur	2(6.06)
Place of posting	
Civil Hospital*	2 (6.06)
District/Sub district hospital**	24(72.73)
Community health centres***	7(21.21)

*tertiary level health care/educational institute, **tertiary level health care, ***secondary level health care

Table 2 .Number of trainees according to individual score

Individual score (Total score 48)*	Number (% out of 33)
Pre-test score <35	15(45.45)
Pre-test score >35	18(54.55)
Post test <35	0(0)
Post test >=35	33(100)

*16 item; each multiplied by 3(16*3=48) (0= no response, 1=incorrect response, 2=partial knowledge, 3=correct response.)

Pre test and Post test Score: The pre-test average score was 68.13 while the post-test average score was 81.25. Thus, there was difference of approximately 13 marks among the average pre-test and post-test score. The difference was statistically significant too (P =0.002163). [Figure-1]Post test individual score of all trainees was above 35. [Table-2]

Table 3: Evaluation of training of enucleation procedure amongst Paramedical ophthalmic assistants

Questions	Correct response		Statistical Interpretation	
	Pre test score	Post test score	t-test (paired)	Sig. (2-tailed)
Knowledge of eye donation				
Information about procedure	73	97	-3.807	0.001
Confidence to perform the procedure	61	80	-3.033	0.005
Basic knowledge of eye anatomy				
Name of muscles of eyeball	78	95	-3.919	0.000
Optic nerve position	91	87	0.702	0.488
Donor Information				
Information to be asked on receiving phone call	61	74	-3.714	0.001
Documents to be reviewed	55	72	-3.4	0.002
Donor Information that needs to be kept confidential	77	81	-1.161	0.254
Collection/transport of eyeball				
Ideal time from death	79	91	-1.789	0.083
Transport means	56	87	-5.782	0.000
Blood Sample Investigation				
Importance	63	89	-5.28	0.000
Tests to be done	65	83	-4.707	0.000
Utility of eyeball				
Part of eyeball used for transplantation	99	99		
Eyes received through donation are used in ____ disease	99	98	1	0.325
Other eye donation related vital information				
Prerequisites for eye donation	73	79	-3.546	0.136
Contraindications of using donated eyes	69	80	-1.53	0.001
Activities done by eye bank	56	90	-6.22	0.000

All participants' knowledge about the utility of eyeball after donation was already good before training. The baseline knowledge of eye anatomy was good and it overall improved with training. [Table-3] The knowledge related to eye donation procedure, eye bank activities, transport means of enucleated eyeballs and blood sample investigations improved drastically post training. [Table-3] Donor information and contraindications of using enucleated eyeball-related knowledge somewhat improved post training. The knowledge about prerequisite for eye donation was good and remained same after training. [Table-3] FGD revealed that they were highly satisfied with the training. The training module provided was very informative and it helped them a lot when they performed the procedure under guidance. However they opined that more practice was needed before they perform independently. They felt the need of presence of an ophthalmic surgeon for initial cases.

Discussion: Training of PMOA at our centre for enucleation procedure was done by surgeons having vast experience in field of enucleation and corneal transplantation. However the assessment as done in this study is necessary to know the actual impact and provides feedback to improve training program contents. Enucleation procedure training for PMOA, to best of our knowledge is conducted for the first time.
Majority (97%) participants who were trained were above 45 years of age which reflects their seniority in job. Training the senior health worker will be a great asset to spread the message of eye donation as they would have established good rapport with local community after this long period of professional services.

Approximately (94%) trained PMOA were posted at sub district /district hospitals which in turn make possible that eye donation calls from surrounding villages will be addressed by PMOA of nearby centre in a timely manner. The current study showed that there was overall improvement of thirteen points in post test scores following training. There was significant improvement in variables like knowledge related to eye donation procedure, eye bank activities, transport means of enucleated eyeballs and blood sample investigations. Study provided to different cadre of health workers to upgrade their skills showed improvement in confidence and competence of participants in other research done elsewhere[8].This suggests scope of better quality services related to eye donation being delivered at community level with training of PMOA.

Areas where there was scope of further improvement were collection of information about donor, knowledge about prerequisites for eye donation and contraindication of enucleation. This requires changes to be made in training curriculum to achieve better results. Role play can be used as an effective tool to enhance communication skills for quickly extracting vital donor related information during initial telephonic talks. Incorporating checklist based approach in training for documentation of information and execution of procedure will help participants not to miss out any vital details.

We tried to analyze participant's perspective about confidence to perform eye donation procedure through FGD which revealed that they were confident to perform the procedure of enucleation after surgical supervision in initial cases. The reason could be the fact that this particular cadre of health worker is not trained for surgical procedure[9].This unfamiliarity with surgical procedures can lead to apprehension to perform enucleation procedure in cadavers. Another study on training of health staff for reproductive health found similar results and stated that tangible variables of knowledge are assessed through questionnaire based study but assessment of skill transfer with objective criteria is difficult to achieve[10].
One of the crucial factors to make high quality eye care services available, accessible and affordable to all is the availability of appropriately trained human resources[11] .Visual rehabilitation by corneal transplantation remains a major option for restoration of vision in those who are corneal blind however unfamiliarity with enucleation procedure is one of the obstacle for procurement of eyeball[12] .NPCB has given recommendations to train PMOA for enucleation procedure to improve eye donation activities in peripheral areas and narrow down the gap of corneal demand in future. Training of PMOA is recommended so that they can be used more efficiently in blindness control activities in the country by providing eye donation related services in remote centres[13] .This training was an effort to better empower existing cadre of health worker for enucleation activities. Based on the outcomes of this study, we can safely conclude that health workers can sufficiently be empowered for enucleation by providing this training, though, some supervision in their initial cases would

be preferred to build up their confidence. The content of training module and methodologies seems suitable and appropriate by applying statistical tests of significance but some components shall be revised to include; practical demonstrations for surgical skill acquirement and check list based approach for gathering information about donor.

Limitations: The sample size was small and long term follow-ups were not done to know the impact of training in the long run particularly whether skills transferred were being utilized at peripheral level to improve eye donation services.

Conclusion: The current training of enucleation procedure leads to skills and capacity building of health workers. This questionnaire based study reveals that enucleation training program was effective for paramedical ophthalmic assistants in South Gujarat as far as gain in knowledge about various aspects of eye donation procedure is concerned. The training program can be enhanced with post training contact sessions to solve practical problems. There is a need of more practical hands on session before the trainees are expected to perform independent procedure. Long term evaluation is required to assess whether actual skill transfer and its practical implication are done or not in order to make such government program worthy and cost effective.

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