## **Original Research Article**

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# Effectiveness of eye donation orientation session in bridging the knowledge gap amongst undergraduate medical students in Delhi

Tanvi Jha<sup>1\*</sup>, Vaishali Adlakha<sup>1</sup>, Aakriti Arora<sup>1</sup>, Vaishnavi Jayaram<sup>1</sup>, Nikita Mary Mundakel<sup>1</sup>, Damodar Bachani<sup>2</sup>

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## \*Correspondence:

Dr. Tanvi Jha,

E-mail: drtanvijha93@gmail.com

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### **ABSTRACT**

**Background:** Corneal blindness may be curable by keratoplasty but the demand for eye donation is, however, unmet due to a variety of factors including knowledge gap. The purpose of this study was to assess the awareness of the medical undergraduate students towards eye donation and to assess the effectiveness of an orientation program in bridging the knowledge gap.

**Methods:** This was a cross-sectional study done on MBBS students of 2nd and 3rd professional years. A pretested questionnaire was used to assess the knowledge of medical students. Knowledge regarding the contraindications to eye donation, the procedure involved and common misconceptions were assessed. This was followed by a session on orientation regarding eye donation. A second assessment using the same questionnaire was done after the session to assess the effectiveness of the same. The data was analysed using EPIINFO version 3.5.4 using Chi square test.

**Results:** Less than 50% students were aware of contraindications and less than 10% students knew ideal cornea harvesting time and nearest eye bank to their homes. Less than one-fourth students knew common causes of corneal blindness. However, most (77%) students were aware that hospital staff must motivate deceased's family for eye donation. Significant increase in awareness was observed post orientation regarding most issues.

**Conclusions:** This study shows that there is a knowledge gap amongst undergraduate medical students regarding eye donation. It also suggests that orientation sessions may be helpful in bridging this gap.

**Keywords:** Keratoplasty, Knowledge gap, Orientation, Medical students

## **INTRODUCTION**

Corneal diseases comprise a significant cause of blindness in the developing world, including India. According to the WHO, corneal blindness follows cataract, glaucoma and age-related macular degeneration as main causes of vision loss and blindness. 1,2 It may not be possible to cure all cases of blindness, though many of them are avoidable. In many instances, corneal blindness is curable by keratoplasty. 3 The demand for corneal

transplantation is much higher than number of corneas donated annually. According to eye bank association of India, 11 lakh people in India are awaiting corneal transplantation.<sup>4</sup> As against this, 59,810 eyes were donated in India during 2015-16, falling well short of the demand.<sup>5</sup> Further, less than 50% of donated eyes are found suitable for transplantation.<sup>6</sup>

The barriers to corneal transplantation include low levels of eye donation, cornea retrieval and its utilization.

<sup>&</sup>lt;sup>1</sup>Lady Hardinge Medical College, New Delhi, India

<sup>&</sup>lt;sup>2</sup>Department of Community Medicine, Lady Hardinge Medical College, New Delhi, India

Barriers to eye donation include perception of incompatibility with religious teachings, lack of awareness about the practice of eye donation, lack of familial support and fear of improper treatment of donors' body. Medical barriers include corneal vascularization, adherent leukoma, glaucoma, retinal disease and ocular surface disease. During retrieval and transplantation, lack of trained eye surgeons, underdevelopment of eye banking services and high cost of keratoplasty lead to non-utilization and wastage of donated tissue. 9

In recent years, eye banking system in India has got a boost due to deployment of professional eye bankers and implementation of hospital cornea retrieval programs (HCRP), where counsellors approach and motivate members of the deceased's family for eye donation. In contrast to the voluntary eye donation program which is considered inefficient, the potential of eye donation through HCRP is reported to be as high as 86%. 9,10

For successful implementation of HCRP, adequate knowledge about the process of eye donation is needed, especially among the medical and paramedical staff. A study conducted in Nepal on awareness amongst medical and paramedical students about eye donation concluded that there is a need for regular eye donation awareness programs in not only the community but also for the medical and paramedical staff in medical colleges and hospitals.<sup>11</sup> A similar study conducted amongst medical students in Delhi, India to assess the perception of first year medical students on eye donation showed that 85.5% students were willing to donate their eves but lacked the knowledge regarding the process of corneal retrieval. It observed that medical students can be involved in the motivation of patients and relatives to pledge their eyes and can be trained to perform grief counselling for donating eyes.12

Recently, a study has demonstrated that even in the presence of awareness amongst the general public about eye donation, only a catalyst in the crucial hours following death can ensure that the corneas are harvested. Presence of such a catalyst is essential for success of HCRP. The role of medical students, as future leaders in healthcare and as chief motivators, counsellors and fieldworkers in promoting eye donation and removing the stigma associated with it, is being increasingly recognized worldwide. It, It is thus, crucial to promote awareness and to train medical students to secure their role as catalysts in HCRP. There is also need to devise concrete strategies and study their effectiveness in bridging the knowledge gap of students.

The present study aimed to assess the awareness of the medical undergraduate students towards eye donation using a pre designed questionnaire, followed by an orientation session on eye donation awareness. Same questionnaire was used after the session to assess the outcomes in knowledge of the students on this subject.

#### **METHODS**

## Study design

This cross-sectional study used a 17-item pretested and self-administered questionnaire to assess the knowledge of students regarding eye donation and corneal transplantation. Participation in the assessment was voluntary and no identifying details were sought.

## Study population

MBBS students at a government medical college in New Delhi participated in the pre and post orientation assessments in 3 batches conducted between 21st to 23rd August 2019. The respondents were from 2nd and 3rd professional years. Out of a total of 574 students in these batches, all students who consented to fill the survey were enrolled in the study.

## Knowledge assessment and data collection

Prior to administration, the questionnaire was pretested on twenty students and was suitably modified. The first round of the assessment was done in students' classroom. Verbal consent was taken after explaining the purpose and implication of the assessment. The questionnaire was distributed and the students were explained the method of filling the questionnaire. The administrators supervised the filling of the forms and collected the same after 5 minutes. After filling of questionnaires, a session on eye donation awareness was conducted. Topics covered in the session included the epidemiology of blindness national program for control of blindness, causes and management of corneal blindness, voluntary eye donation, hospital cornea retrieval program and methods of counseling grieving relatives. The second assessment was made after the session using the same questionnaire to assess the effectiveness of the session in bridging the knowledge gap of students.

## Statistical analysis

The data was analyzed using EPIINFO version 3.5.4. Chi square test was applied to assess proportions of correct responses before and after orientation session. P<0.05 was considered significant.

Information obtained before and after orientation session was academic in nature. Thus, the approval of the institutional ethics committee was not obtained. The data were collected within the principles of the declaration of Helsinki. Participation was voluntary and information was kept fully confidential and anonymous in nature.

## **RESULTS**

Pre orientation questionnaire was filled by 551 students. 161 students who responded after the session on eye donation awareness were included in the study. 97 (60.2%) were from second professional MBBS and 64 (39.7%) students were from third professional MBBS year. Prior to orientation, more than half (56.52%) of the students were aware that pledging of eyes before death is not necessary for eye donation. Nearly 2/3rd (65.22%) students knew that cornea is the tissue required for transplantation. Only 38.51% students were aware that diabetes was not a contraindication and about 43% students were aware that age more than 75 years was not a contraindication for eye donation and that persons with cataract could donate eyes. Nearly half (49%) students were aware that acute viral hepatitis is a contraindication

to eye donation. Significant increase in the awareness was observed after the orientation session (Table 1).

We also assessed knowledge of students regarding the procedure and locations of eye banks in Delhi. Only 8% students were aware of the location of the eye bank nearest to their homes. Less than 3% students were correctly aware about the ideal cornea-harvesting time (6 to 8 hours). Only one in five (20.5%) students knew that after retrieval, the tissue is not stored in normal saline. The knowledge regarding these issues increased significantly after orientation (Table 1).

Table 1: Knowledge about eye donation before and after orientation session of MBBS students (N=161).

S. No.	Statements/questions		responses prientation %		t responses ientation %	Chi square	P value*
1.	Only those who have pledged their eyes can donate them after death.	91	56.52	152	94.41	62.41	< 0.0001
2.	Only the cornea is used for transplant.	105	65.22	116	72.05	1.75	0.09
3.	Patients with diabetes cannot donate eyes.	62	38.51	140	86.96	80.62	< 0.0001
4.	Patients with cataract can donate eyes.	69	42.86	146	90.68	82.99	< 0.0001
5.	Eyes can be retrieved only of individuals up to 75 years of age	69	42.86	131	81.37	50.73	< 0.0001
6.	Acute viral hepatitis is a contraindication to eye donation	79	49.07	152	94.41	81.63	< 0.0001
7.	Do you know the eye bank nearest to your home and how to contact it in case of passing away of a relative?	13	8.07	124	77.02	156.50	<0.0001
8.	Within how many hours should eyes be retrieved from the eyes of the deceased?	4	2.48	110	68.32	152.10	< 0.0001
9.	After retrieval, donor eyes are stored in normal saline for transport.	33	20.50	88	54.66	40.05	< 0.0001
10.	Eye donation leads to temporary disfigurement of the eyes.	103	63.98	148	91.93	36.59	< 0.0001
11.	Is it required from the hospital staff to motivate family members about eye donation of terminally ill patients?	124	77.02	134	83.23	1.95	0.08
12.	If you receive a transplantation, can you track the donor's family via eye bank to thank them.	56	34.78	113	70.19	40.46	< 0.0001
13.	Corneal blindness is the most common cause of blindness in India	36	22.36	42	26.09	0.61	0.22
14.	What are 3 common causes of corneal blindness in India? (all correct)	25	15.53	54	33.54	14.11	< 0.0001
15.	Corneal blindness is the only blindness treated by eye donation.	50	31.06	105	65.22	37.63	< 0.0001
16.	The human body can reject the transplanted cornea	39	24.22	120	74.53	81.52	< 0.0001
17.	When is the eye donation fortnight celebrated	15	9.32	35	21.74	9.47	0.01

<sup>\*</sup>p<0.05 is statistically significant.

Nearly 64% students were acquainted with the fact that eye donation did not lead to any disfigurement of the eye which increased significantly to about 92% students after the session. A large percentage of students (77%) were of the view that hospital staff must motivate the deceased's family for eye donation. Only one in three (34.78%) students knew that to maintain confidentiality, the

identity of the donors and their family cannot be tracked. Correct response to this question increased significantly to over 70% after the orientation session (Table 1).

Knowledge regarding common causes of corneal blindness was very low (15.53%) which doubled after orientation (33.54%). Awareness regarding corneal

blindness being the only blindness that can be treated by eye donation was present in 31% students, which increased significantly post orientation to 65.22%. The fact that human body can reject transplanted cornea was known to one in four students (24.22%). As many as 3 in 4 (74.53%) students became aware of this fact after orientation. Only 9% students had knowledge about eye donation fortnight organized in India, which although increased significantly post session, but was still low (22%) (Table 1).

#### DISCUSSION

Corneal blindness is a major cause of preventable and treatable blindness, especially in developing countries. Keratoplasty or corneal transplantation, which is used to treat corneal blindness, is the world's most frequent type of transplantation performed. Despite this, it is well short of demand globally as demand of only 1 in 70 persons requiring corneal transplantation is met.<sup>15</sup> Prevention and management of corneal blindness has, therefore, been one of the major focus areas of the national program for control of blindness in India.<sup>16</sup> Professional eye banking and implementation of HCRP has the potential of bridging the demand supply gap because of its increased effectiveness in retrieving corneas from the deceased.<sup>10</sup>

Awareness about eye donation among medical practitioners is crucial to motivate members of the community for eye donation both inside and outside the hospitals. Tandon et al concluded in their study that prior knowledge of eye donation and literacy in donors in hospitals had no correlation with cornea procurement, whereas by active counselling, corneas can be retrieved in families with no prior knowledge about eye donation.<sup>17</sup>

Several surveys have been carried out to assess knowledge of medical practitioners regarding eye donation. Majority of participants were aware about eyes donation in studies by Arya et al and Singh et al in India, but lacked knowledge about specific aspects of eye donation such as the appropriate time for cornea retrieval and medical contraindications. 11,12 Similar gaps in knowledge were observed in the study by Eze et al in Nigeria where there was no difference in knowledge level about eye donation among medical and non-medical students.<sup>18</sup> In a study by Ali et al in Pakistan, the knowledge of first and fourth year medical students was comparable with respect to organ donation, suggesting paucity of teaching on the subject in medical curricula.<sup>7</sup> Similar results were obtained in this study, where majority of medical students lacked specific knowledge about procedures and contraindications of eye donation.

The knowledge gap can be bridged by the means of awareness sessions, media campaigns and increased emphasis on organ donation in medical school curricula. In the present study, the knowledge of medical students regarding eye donation was assessed before and after a session on the same. Following the orientation session,

there was a significant increase in knowledge related to various aspects of corneal blindness, corneal retrieval and keratoplasty. Most students were already aware that hospital staff was required to motivate the deceased's family for eye donation and that eye donation did not lead to disfigurement. Awareness regarding causes of blindness did not increase significantly post session, thus required more focus during orientation sessions.

Very few students were able to enlist the common causes of corneal blindness prior to and post the session. There was significant increase in correct answers after their orientation showing the effect of such educational endeavours on increasing their knowledge base. Most students were also not aware that the eye donation fortnight is celebrated in India in the last week of August and first week of September and even though the correct answers increased significantly after the session, these were not up to desired levels. Active participation of students during the eye donation fortnight will make them more familiar about this campaign in promoting eye donation.

A limitation of the study was that the second assessment was carried out just after the orientation session. Longer interval between learning and retrieval of knowledge and facts has been associated with poor retention rate and spaced repetition has been suggested as a method to improve recall. Hence, it was suggested that such sessions should be held at regular intervals to refresh students' knowledge. Further, sessions which simulate real life experience of talking to deceased's family may help students become better motivators and counsellors. Inclusion of topics related to organ donation in medical curricula and more vigorous IEC activities are some of the other measures that can improve medical practitioners' knowledge of the same.

### **CONCLUSION**

The potential of medical students as important facilitators and promoters of eye donation has been recognized. Our study, however, shows that there is a knowledge gap amongst undergraduate medical students regarding eye donation. Hence, regular orientation sessions must be held to bridge this gap in knowledge and attitude. This could, in turn. help them in their role as catalysts for promotion of eye donation and removal of the stigma associated with it, thereby contributing to the battle against corneal blindness.

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