

## Original Research Article

# Comparison of level of awareness regarding eye donation among medical, engineering and law students in Jammu, India

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## ABSTRACT

**Background:** Blindness due to cornea is a major public health issue, especially in developing countries like India. Corneal transplantation is the treatment for restoring vision in corneal blind patients. The aim of present study was to compare the level of awareness regarding eye donation among medical, engineering and law students.

**Methods:** The present cross sectional, comparative study involved students following their respective courses (1<sup>st</sup> final year) from October 2017 to December 2017. Out of 168 students, 60 were medical, 56 were engineering and 52 were law students. The study started with initial clarification of questions and those who were willing to participate, were requested to fill the semi-structure pilot tested questionnaire form on eye donation with informed consent.

**Results:** All the students were aware of eye donation, but medical students were much aware on various parameters. The most powerful information tool to reach out all the students was television whereas among medical ophthalmology is one of subject they study in their respective course which provide them maximum knowledge regarding eye donation.

**Conclusions:** Level of awareness and knowledge regarding eye donation is much better among medical students (MBBS) in comparison with engineering and law students. Thus, professionals (medical doctors, engineers and lawyers) should be actively involved in creating awareness regarding eye donation and hence play vital role to reach out people for optimum benefit.

**Keywords:** Awareness, Eye donation, Medical, Engineering and law students

## INTRODUCTION

The structural and functional integrity of cornea is of paramount importance for normal visual function. Its external location makes it vulnerable to a variety of insults that can lead to sight threatening complications.<sup>1</sup> Corneal diseases constitute a significant cause of visual impairment and blindness, especially in developing countries including India.<sup>2</sup> Globally about 39 million people estimated to be blind. About 6.8 million people are blind due to corneal pathology in India of which 1

million have bilateral blindness.<sup>3</sup> The number of patients waiting for corneal transplantation is growing due to insufficient number of eye donations in India. People willing to pledge their eyes for donation and their relatives to honor that pledge upon the death of the person are two important aspects of eye donations. In India, the number of corneal transplantations far outnumbers its requirement.<sup>4</sup> Conventional approaches in India have focused largely on age related cataract and refractive errors as they constitute the major cause of avoidable blindness. NPCB has undertaken initiatives to

prevent corneal blindness and developed future action plan towards eye donation. Eye donation is an act of voluntary donation of one’s eyes after his/her death. Only corneal blindness can be benefitted from this process. But there is a huge gap between demand and supply of cornea due to low awareness.<sup>2</sup> Therefore, this study was conducted to compare level of awareness regarding eye donation among medical, engineering and law students and to explore ways to involve medical community and other sectors in creating awareness.

**METHODS**

The present cross-sectional, comparative study was conducted on medical, engineering and law students (1<sup>st</sup> - final year) in Jammu from October 2017 to December 2017. Presently there is one corneal transplantation centre at Jammu province which is functional at Government Medical College Jammu.

The study started with an initial clarification of questions among the students followed by administration of semi-structure pilot tested questionnaire on eye donation with their consent. The questionnaire consisted of 15 questions related to eye donation and these questionnaires were provided to each participant and every question explained to every participant.

**Inclusion criteria**

- Medical, Engineering and Law college students
- Students in their respective courses from first year to final year
- Students of both the sex.

**Exclusion criteria**

- Those who did not gave consent
- Those who were on vacations
- Those who were busy with exams.

**Statistical analysis**

The data was analysed using statistical software MS Excel / SPSS version 17.0 for windows. Data presented as percentage (%) as discussed appropriate for quantitative and qualitative variables.

**RESULTS**

Total of 168 students, participated actively and provided answers for all the questions in the study. The data was analyzed. All the participated students were aware of eye donation.

**Table 1: Reported awareness and knowledge of medical, engineer and law students regarding eye bank in Jammu and various aspects of eye donation.**

Awareness and knowledge domain	Medical students correct response n=%	Engineer students correct response n=%	Law students correct response n= %
Aware of an eye bank in GMC Jammu.	100	83.9	55.7
Portion of eye removed in eye donation.	81.7	80	42.4
knowledge regarding storage of donated eyes.	61.6	58.2	53.8
Portion of eye is used for transplantation.	100	85.7	45
One eye donor can provide vision to?	66.7	53.6	25
Till how many hours after death, eyes can be donated?	64.1	55.5	40.5
Is there any age limit for donation?	36.7	34.9	30.8
Who do you think is unfit to donate eyes?	90	53.5	26.9
Can eyes of any dead person be removed for donation?	36.7	26.8	17.4
Can a person with diabetes/ hypertension /any chronic disease donate eyes?	56.6	40.7	26.9

Figures in parenthesis are in percentages.

Cent percent medical students knew that there is an eye bank in GMC Jammu as compared to 83.9% engineer and 55.7% law students. 81.7% medical students, 80% engineer and 42.4% law students knew regarding portion of eye removed in eye donation. 61.6% medical students, 58.2% engineer and 53.8% law students knew regarding storage of donated eyes. 100% medical students, 85.7% engineer and 45% law students knew regarding portion of

eye used for transplantation. 66.7% medical students, 53.6% engineer and 25% law students knew that one eye donor provide vision to two blinds. 64.1% medical students, 55.5% engineer and 40.5% law students knew that eyes can be donated 6 hrs after death. 36.7% medical students, 34.9% engineer and 30.8% law students knew that there is no age limit for eye donation. 90% medical students, 53.5% engineer and 26.9% law students knew that HIV and HEP-B patients can’t donate eyes. 36.7%

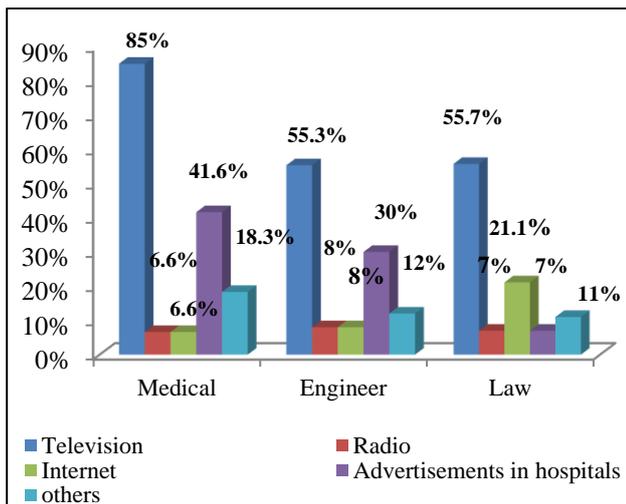
medical students, 26.8% engineer and 17.4% law students knew that eyes of any dead person can't be removed for donation. 56.6% medical students, 40.7% engineer and 26.9% law students knew that diabetic and hypertensive's can donate eyes (Table 1).

**Table 2: Reported awareness and opinion of participated students regarding eye donation in Jammu.**

Awareness and opinion domain	Medical students n=%	Engineer students n=%	Law students n=%
Willing to donate eyes	78.3	60.8	53.7
Registered for eye donation	5	2	2

Figures in parenthesis are in percentages.

Table 2 depicts the 78.3% medical; 60.8% engineer and 53.7% law students were willing to donate eyes. 5% medical, 2% engineer and 2% law students registered for eye donation.



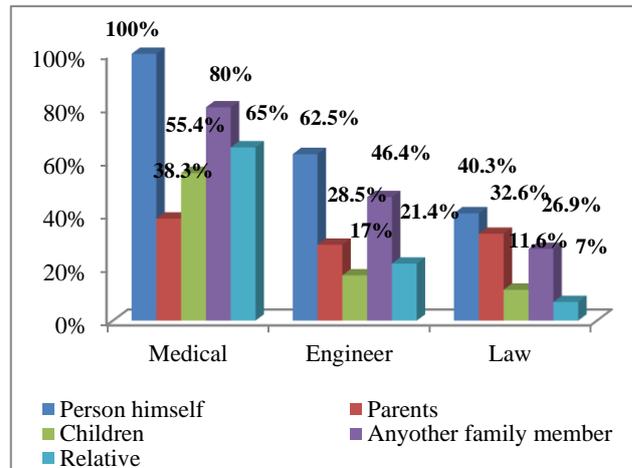
Advertisements in the hospitals was in the form of posters in OPD etc.

**Figure 1: Various sources of information regarding eye donation for medical, engineer and law students and multiple responses had been given by students as depicted in figure.**

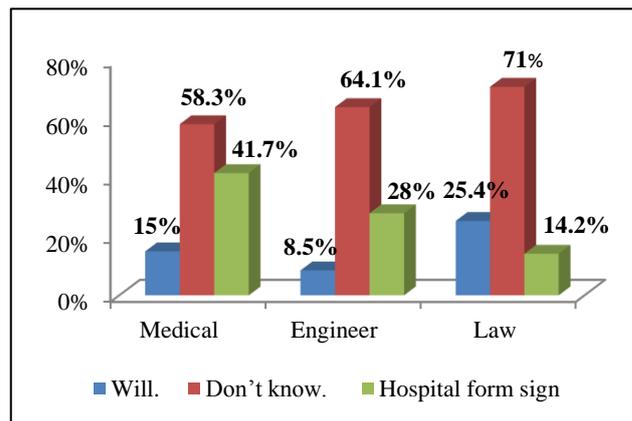
Multiple responses had been given by students about source of information regarding eye donation. As seen in figure, maximum number of students i.e. 85% medical, 55.3% engineer and 55.7% law students learn about eye donation through television medium as compared to other sources (Figure 1).

Figure 2 illustrated that, 100% medical, 62.5% engineer and 40.3% law students knew that consent for eye donation can be given by person himself/herself before death, but multiple responses had been given by students in this regard.

Figure 3 showed that 58.3% medical, 64.1% engineer and 71% law students were not aware of procedure regarding donation of eyes and multiple responses given.



**Figure 2: Knowledge of medical, engineer and law students regarding consent for eye donation and multiple responses had been given by students.**



**Figure 3: Knowledge of medical, engineer and law students regarding procedure of eye donation.**

**DISCUSSION**

The most commonly done organ transplantation procedure is corneal transplantation and about 95% of corneal blindness is avoidable.<sup>3</sup> But there is a huge gap between demand and supply of cornea due to low awareness.<sup>2</sup> So, in the present scenario there is a need to enhance the awareness regarding eye donation among potential donors.

In the present study, 100% medical students were aware of existence of an eye bank in GMC Jammu as compared to 83.9% engineer and 55.7% law students. This might be due to reason that medical students participated in this study were from GMC Jammu. Vallinayagam M et al, in their study found that 74% of medical college students and 66.19% of engineering college students were aware of the existence of the eye bank.<sup>5</sup>

In the present study, 81.7% medical, 80% engineer and 42.4% law students knew that whole eyeball is removed for eye donation while 100% medical students, 85.7% engineer and 45% law students knew that only cornea is used for transplantation. Vallinayagam M et al, in their study found that 54.8% medical students and 58.2% engineering students were aware that the whole eyeball is removed after death but cornea is the part used for grafting were known by 83.03% medical and 70.6% engineering students.<sup>5</sup> Bharti MK et al, in their study found that 65.25% of students knew that either the whole eye (40%) or cornea (25.25%) is removed from the donor but only 30.25% knew that it is the cornea that is transplanted.<sup>6</sup> Nekar MS et al, conducted a study at Hubli showed that 62.2% of medical students believed that whole eyeball is transplanted.<sup>7</sup> Gupta A et al, in a study on nursing students found that 74.4% students knew that only the cornea from the donated eye is used for grafting.<sup>8</sup> In a study by Suresh K et al, the whole eyeball is removed from the donor for transplantation was answered by 31.5% participants.<sup>9</sup> Dhaliwal U, found that 24.5% medical students in their study felt that the whole eyeball was removed from the donor. For the purpose of corneal transplantation, the whole eyeball is removed generally but in some parts of India only corneal removal is also practical but whole eyeball removal has the advantage that for medical and research purposes sclera can also be used.<sup>10</sup>

In the present study 61.6% medical, 58.2% engineer and 53.8% law students knew regarding storage of donated eyes. Bharti MK et al, in a study showed that 57.75% students did not know that the donor eye can be stored before transplantation. The donated eyes are stored in an eye bank, which acts as a centre for the collection, storage, processing and distribution of donor corneas. The whole eye ball can be stored in the refrigerator (moist chamber) for up to 48 hours while the corneoscleral button preserved in optisol medium could be stored for up to 14 days before transplantation.<sup>6</sup> Kumari R, showed that 40% of the students knew where the donated eyes are stored.<sup>11</sup>

In the present study 66.7% medical, 53.6% engineer and 25% law students were aware of the aspect that one eye donor can provide vision to two blinds. Vallinayagam M et al, in their study found 75.1% medical and 73.4% engineering students were aware of the aspect of one donor providing vision for two blinds.<sup>5</sup> Suresh et al, in their study found that 87.53% knew that one donor can provide vision for two blind persons.<sup>9</sup>

In the present study 64.1% medical, 55.5% engineer and 40.5% law students knew that ideal time interval between death and enucleation is within 6 hours. Vallinayagam M et al, in their study found that only 28.13% of students were aware that the ideal time interval between death and enucleation is within 6 hours while Singh MM et al, in their study found that less than 50% of the medical students were aware of this fact.<sup>5,12</sup> However, Kannan

KA, in a study indicate that 63.6% students (medical and non-medical) had a fairly good knowledge in this regard.<sup>13</sup>

In the present study 36.7% medical, 34.9% engineer and 30.8% law students believed that there is no fixed age limit for an eye donor. Vallinayagam M et al, in their study found that 37.55% medical and 31.6% engineering college students felt there is no age limit, projecting that medical students have more knowledge in this regard.<sup>5</sup> Kumari R, in a study on 200 life science students found that a total of 170 believed that there is no age limit for donating eyes.<sup>11</sup>

In the present study, 90% medical, 53.5% engineer and 26.9% law students knew regarding individuals (diseases HIV, HEP-B etc/contraindications) not fit for eye donation whereas 36.7% medical, 26.8% engineer and 17.4% law students knew that eyes of any dead person can't be removed for donation. However, 56.6% medical, 40.7% engineer and 26.9% law students knew that hypertensives and diabetics can pledge eye donation. Vallinayagam M et al, in their study found that 46.40% were aware of contraindications. 69.3% medical and 60.40% engineering students felt that people with either diabetes, systemic hypertension or any chronic disease can donate.<sup>5</sup> All deceased people can be considered as suitable donors except when the cause of death or other factors might pose risk factors for the individuals performing the enucleation.<sup>14</sup> Suresh K et al, in a study found that HIV (70.59%), cataract (14.59%), and diabetes (9.88%) are contraindications as perceived by participants.<sup>9</sup> Johnson D et al, in their study found that patients suffering from haematological malignancies, neurodegenerative conditions, nonhaematological malignancies, chronic renal failure and eye disease were ineligible.<sup>15</sup> Dhaliwal U, in his study noted that corneal disease, ocular infections, ocular tumours, uveitis, glaucoma, HIV and hepatitis-B infection as a contraindication for eye donation.<sup>10</sup>

In the present study, 78.3% medical, 60.8% engineer and 53.7% law students were willing to donate eyes while 5% medical students, 2% engineer and 2% law students registered for eye donation. Vallinayagam M et al, in a study found that 84.8% students were willing to pledge their eyes. However, only 4.5% have registered for eye donation. Gupta A et al, in their study found that, 85.1% participants were either willing or had already pledged to donate their eyes.<sup>8</sup> Dhaliwal U, in his study found an encouraging finding that more than 80% of the participants of both groups were willing to donate.<sup>10</sup>

In the present study, 85% medical, 55.3% engineer and 55.7% law students learn about eye donation through television medium. In this regard multiple responses given by students as depicted in Figure 1. Also, among medical students' ophthalmology is one of subject they study in their respective course which provide them complete knowledge regarding eye donation. Mass media

plays an important role in creating awareness. Vallinayagam M et al, in their study found that television has been the main source of information for 42.2% engineering students and 32.1% medical students.<sup>5</sup>

In the present study, 100% medical, 62.5% engineer and 40.3% law students knew that consent for eye donation can be given by person himself/herself before death. Multiple responses given by students in this regard as depicted in Figure 2. Consent by parents are required if dead is minor. Consent is obtained from family/relatives of the donor after death. 68.30% medical and 51.24% engineering students in a study by Vallinayagam M et al, agreed that consent of relatives is required after death.<sup>5</sup> 77.5% students from study by Kumari R, felt that consent of the family members is not required for donation.<sup>11</sup> Magdum R et al, in a study on paramedical group found that 75% of participants felt that the next of kin has the right to give consent for donation.<sup>16</sup> In a study by Bhandary S et al, 55.6% were knew about fact that the next of the kin has the right to give consent.<sup>17</sup>

In the present study, 58.3% medical, 64.1% engineer and 71% law students were not aware of procedure regarding donation of eyes after death. But again, multiple responses given by students regarding procedure for eye donation as depicted in Figure 3. Pertaining to this question no option was given, and all responses were given by students themselves. The correct answer of every question was explained to participants after filling questionnaire form.

Thus, level of awareness and knowledge regarding eye donation among medical students is higher in comparison to engineering and law students which might be due to reason that medical students study ophthalmology as one of subject in their respective course which provide them maximum knowledge regarding eye donation.

## CONCLUSION

From present study, it has been concluded that all the students were aware of eye donation but level of awareness and knowledge regarding certain aspects of eye donation was much better among medical students (MBBS) in comparison with engineering and law students. Professionals have great potential to increase knowledge regarding eye donation as they come in contact with many people and therefore have a great opportunity to motivate them to donate eyes.

## Recommendations

Thus, in addition to media campaign, professionals (medical doctors, engineers and lawyers) who are in close collaboration with the community should be actively involved in creating awareness regarding eye donation and hence play vital role to reach out people for optimum benefit.

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