Original Research Article

Awareness, knowledge and attitude regarding eye donation in school going children in Uttarakhand

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ABSTRACT

Background: Corneal blindness is one of the major causes of blindness in India which can be treated by corneal transplantation but collection of cornea lacks behind the requirement. Therefore awareness regarding eye donation and also willingness to pledge for the same is the need of the hour. Students form the backbone of any society which can motivate the society regarding eye donation only if they are well aware. This study was conducted to evaluate awareness and knowledge regarding eye donation in school going children.

Methods: Total 375 students of schools were surveyed between 25th August to 8th September 2017. We used a pre-tested, semi-structured questionnaire to obtain information from the students regarding awareness of eye donation and willingness to pledge eyes for eye donation.

Results: Out of total 375 subjects, 290 (77.3%) were aware of eye donation amongst which males were maximum 194 (66.89%) as compared to females 96 (33.10%). 231 (61.1%) students were willing to pledge eyes for eye donation which was maximum with males 142 (61.47%). There was significant difference between male and females about the knowledge regarding which, part of the eye can be utilized after eye donation, place of eye donation, what to do for eye donation in the event of a death, facial features after donation was significant with p value (0.00) each.

Conclusions: The awareness regarding eye donation is high among males as compared to females and despite being aware response for pledging eyes is not that good which means further motivation is needed for eye donation among students especially females.

Keywords: Awareness, Pledging, Corneal transplantation, Eye donation, School going children

INTRODUCTION

Corneal diseases are among the major causes of vision loss and blindness in the world today according to the World Health Organization. In India, there are approximately 6.8 million people who have corneal blindness with vision less than 6/60 in at least one eye, out of which, about 1 million are bilateral blind. According to NPCB, there are currently 1,20,000 corneal blind persons and there is addition of 25,000-30,000 cases every year in the country. Approximately we need 1,00,000 good quality of corneas for transplantation by proper health care education and conventionally cured by corneal transplantation for which awareness regarding eye donation is essential. Infective keratitis either active or healed act as the major indication for keratoplasty. There is a huge gap in the demand and supply and to fill this gap we need to make the people aware and motivated about eye donation, especially youth which is comprised of students which are an important part of our society and can act as best motivators. In view of that this study was conducted to evaluate awareness and knowledge regarding eye donation in school going children as these students are future of the nation and their knowledge,
awareness and attitude towards eye donation can decide the future of eye donation in the nation.

METHODS

It was a cross-sectional study which was conducted between 25th August to 8th September 2017, the period that is observed as National Fortnight on Eye Donation. We obtained approval from institutional research and ethical committee to conduct this study. The study was carried out in four randomly selected schools of Haridwar. All the students of standard VIII, IX and X of these four schools constituted the study population. The school authorities were contacted two weeks prior to the study and were explained about the nature and purpose of the study. All the schools were surveyed on separate days. We could cover all the students present on that particular day of survey and that came to be 375. We used a pre-tested, semi-structured questionnaire to obtain information from the students. Questions were in local language and it included demographic details, student’s knowledge and awareness regarding eye donation, myths related to eye donation and sources of information regarding eye donation. The ophthalmologists, para-medical ophthalmic assistant and eye donation counselor of a tertiary care level hospital collected all the information.

Statistical analysis

Initially data obtained were entered into an excel spreadsheet and then transferred to SPSS software (Statistical Package for Social Sciences, version 22, SPSS Inc, Chicago, IL) for analysis. Statistical data were expressed in terms of means ± standard deviations (mean±SD). The descriptive statistics was used to express data in terms of frequency and percentage. Pearson Chi-square test was used to find out the association between categorical variables. P<0.05 was considered statistically significant.

RESULTS

A total of 375 students participated in this study and all students submitted their responses. Out of 375, 264 (70.4%) were males and 111 (29.6%) were females Figure 1. Average age of the students involved in study was 15.01 years. 290 (77.3%) were aware about donation of eyes can be done after death and 231 (61.1%) students were willing to pledge eyes. Awareness was maximum among males 194 (66.89%) as compared to females 96 (33.10%). Willingness to pledge eyes for eye donation was 231 (61.1%) which was maximum with males 142 (61.47%).

The location to donate eyes & only eye bank in Uttarakhand was known to 332 (88.5%) students. The ideal time of eye donation is within 6 hours of death was known to 358(95.5 %) of the students. Disclosure of identity of donor cannot be done was known to only 196 (52.3%) of students.

Table 1: Awareness and knowledge on eye donation.

| Questions                                                      | Right response N (%) | Other responses N (%) |
|---------------------------------------------------------------|----------------------|-----------------------|
| Donation of eyes can be done after death                      | 290 (77.3)           | 85 (22.7)             |
| Willing to pledge eyes                                        | 231 (61.1)           | 144 (38.5)            |
| Non-specific reason for not pledging the eyes                 | 270 (72.0)           | 105 (28.0)            |
| Awareness about the only Eye Bank in Uttarakhand at HIMS      | 332 (88.5)           | 43 (11.5)             |
| Cornea can be utilized after eye donation                      | 280 (74.7)           | 95 (25.33)            |
| People of any age can donate eyes                              | 360 (96.0)           | 15 (4.0)              |
| People suffering from hepatitis B & C cannot donate eyes      | 287 (76.5)           | 88 (23.5)             |
| Eye donation can be done within 6-8 hours after death         | 358 (95.5)           | 17 (4.5)              |
| Place for eye donation                                        | 243 (64.8)           | 132 (35.2)            |
| Pre-requisites for eye donation                                | 234 (62.4)           | 141 (37.6)            |
| Time required for enucleation                                 | 334 (89.1)           | 41 (10.9)             |
| What happen to the face after enucleation                     | 260 (69.3)           | 115 (30.7)            |
| Disclosure of identity of donor to the recipient              | 196 (52.3)           | 179 (47.7)            |
| Knowledge about pledging of eyes                              | 130 (34.7)           | 245 (65.3)            |
### Table 2: Myths on eye donation.

| Questions                                                      | Right responses N (%) | Percentage (%) |
|---------------------------------------------------------------|-----------------------|----------------|
| Donation of eyes lead to blindness in the next birth          | 338 (90.1)            | 37 (9.9)       |
| Prohibited entry in the heaven after eye donation             | 288 (76.8)            | 87 (23.2)      |
| Financial transaction to the relatives of donor for eye donation | 252 (67.2)            | 123 (32.8)     |
| Corneal blind recipient gets cornea free of cost              | 188 (50.1)            | 187 (49.9)     |

### Table 3: Relationship of the gender with the awareness of eye donation.

| Responses                                                      | Male N (%) | Female N (%) | P* value |
|---------------------------------------------------------------|------------|--------------|----------|
| Are you aware about eye donation?                             |            |              |          |
| Can be done before death                                     | 16 (4.26)  | 3 (0.80)     | 0.04     |
| Can be done after death                                      | 194 (51.73)| 96 (25.60)   |          |
| Can be done during life                                      | 50 (13.33) | 12 (3.20)    |          |
| Don't know                                                    | 4 (1.06)   | 0 (0.00)     |          |
| Willing to pledge eyes today                                  |            |              | 0.00     |
| Yes                                                           | 142 (37.86)| 89 (23.73)   |          |
| No                                                            | 13 (3.46)  | 2 (0.53)     |          |
| I will think                                                  | 99 (26.40) | 19 (5.06)    |          |
| Don't know                                                    | 10 (2.66)  | 1 (0.26)     |          |
| Reason for not pledging the eyes                              |            |              | 0.02     |
| Religious                                                    | 38 (10.13) | 5 (1.33)     |          |
| Facial disfigurement                                          | 25 (6.66)  | 10 (2.66)    |          |
| Blindness in next birth                                      | 22 (5.86)  | 5 (1.33)     |          |
| Any other reason                                              | 179 (47.73)| 91 (24.26)   |          |
| Awareness about the only eye bank in Uttarakhand at HIMS      |            |              | 0.04     |
| Yes                                                           | 229 (61.06)| 103 (27.46)  |          |
| No                                                            | 10 (2.66)  | 2 (0.53)     |          |
| May be                                                       | 15 (4.00)  | 0 (0.00)     |          |
| Don't know                                                    | 10 (2.66)  | 6 (1.60)     |          |

P* - P value statistically significant calculated by Pearson Chi-Square.

### Table 4: Relationship of the gender with the knowledge of eye donation.

| Responses                                                      | Male N (%) | Female N (%) | P* value |
|---------------------------------------------------------------|------------|--------------|----------|
| Which part of the eye can be utilized after eye donation       |            |              | 0.00     |
| Whole globe                                                   | 68 (18.13) | 4 (1.06)     |          |
| Cornea                                                        | 175 (46.66)| 105 (28.00)  |          |
| Retina                                                        | 18 (4.80)  | 1 (0.26)     |          |
| Don't Know                                                    | 3 (0.80)   | 1 (0.26)     |          |
| Who can donate eye                                            |            |              | 0.85     |
| People of any age                                             | 252 (67.20)| 108 (28.80)  |          |
| Suffering for Rabies                                          | 4 (1.06)   | 1 (0.26)     |          |
| Less than one year of age                                     | 5 (1.33)   | 1 (0.26)     |          |
| Don't Know                                                    | 3 (0.80)   | 1 (0.26)     |          |
| Who cannot donate eyes                                        |            |              | 0.48     |
| People suffering from hepatitis B & C                        | 197 (52.53)| 90 (24.00)   |          |
| Diabetic people                                               | 30 (8.00)  | 11 (2.93)    |          |
| Who wear spectacles                                           | 19 (5.06)  | 4 (1.06)     |          |
| Don't Know                                                    | 18 (4.80)  | 6 (1.60)     |          |
| After death, eyes should be donated within                    |            |              | 0.39     |
| 6-8 hours                                                     | 251 (66.93)| 107 (28.53)  |          |
| 10-24 hours                                                   | 8 (2.13)   | 2 (0.53)     |          |
| Time does not matter                                         | 3 (0.80)   | 0 (0.00)     |          |
| Don’t know                                                    | 2 (0.53)   | 1 (0.26)     |          |

P* - P value statistically significant calculated by Pearson Chi-Square.
| Responses                                      | Male N (%) | Female N (%) | P^* value |
|------------------------------------------------|------------|--------------|------------|
| **Where can eye donation be done?**            |            |              |            |
| Hospital                                       | 104 (27.73)| 17 (4.53)    | 0.00       |
| House                                          | 2 (0.53)   | 2 (0.53)     |            |
| Mortuary                                       | 7 (1.86)   | 0 (0.00)     |            |
| All the above                                  | 151 (40.26)| 92 (24.53)   |            |
| **What to do in the event of a death?**        |            |              |            |
| Switch off the fans                            | 142 (37.86)| 92 (24.53)   | 0.00       |
| Put wet cotton on lids                         | 62 (16.53) | 11 (2.93)    |            |
| Pillow under the head                          | 16 (4.26)  | 2 (0.53)     |            |
| All of the above                               | 44 (11.73) | 6 (1.60)     |            |
| **How much time does the eye removal take?**   |            |              | 0.14       |
| One hour                                       | 11 (2.93)  | 1 (0.26)     |            |
| 15-20 minutes                                  | 229 (61.06)| 105 (28.00)  |            |
| Two hours                                      | 8 (2.13)   | 2 (0.53)     |            |
| Don’t Know                                     | 16 (4.26)  | 3 (0.80)     |            |
| **After eye removal**                          |            |              | 0.00       |
| Face looks disfigured                          | 16 (4.26)  | 3 (0.80)     |            |
| Orbital cavity is left empty                   | 59 (15.73) | 13 (3.46)    |            |
| Artificial prosthetic eye is placed in the orbit and face looks normal | 169 (45.06) | 91 (24.26)  |            |
| Don’t Know                                     | 20 (5.33)  | 4 (1.06)     |            |
| **Can the identity of donor be disclosed to the recipient** | | | 0.05 | 
| Yes                                            | 147 (39.20)| 49 (13.06)   |            |
| No                                             | 78 (20.80) | 46 (12.26)   |            |
| May be                                         | 25 (6.66)  | 7 (1.86)     |            |
| Don't Know                                     | 14 (3.73)  | 9 (2.40)     |            |
| **Pledge for eye donation means**              |            |              | 0.02       |
| It is same as eye donation                      | 50 (13.33) | 11 (2.93)    |            |
| Commitment by the donor for eye donation after death | 81 (21.60)| 46 (12.26)  |            |
| Commitment by the relatives for eye donation after death | 88 (23.46)| 42 (11.20)  |            |
| Don’t know                                     | 45 (12.00) | 12 (3.20)    |            |
| P^*-P value statistically significant calculated by Pearson Chi-Square. | | | |

**Table 5: Relationship of the gender with attitude and myths of eye donation.**

| Responses                                      | Male N (%) | Female N (%) | P^* value |
|------------------------------------------------|------------|--------------|------------|
| **What has been the source of your awareness regarding eye donation?** | | | 0.04 |
| Family/friends/doctor                          | 7 (1.86)   | 8 (2.13)     |            |
| Television/radio/posters/pamphlets/internet    | 31 (8.26)  | 14 (3.73)    |            |
| Magazine/newspaper                             | 8 (2.13)   | 0 (0.00)     |            |
| All the above                                  | 218 (58.13)| 88 (23.46)   |            |
| **Would you like to spread awareness regarding eye donation in society** | | | 0.46 |
| Yes                                            | 256 (68.26)| 110 (2.93)   |            |
| No                                             | 2 (0.53)   | 1 (0.26)     |            |
| May be                                         | 4 (1.06)   | 0 (0.00)     |            |
| Don't know                                     | 2 (0.53)   | 0 (0.00)     |            |
| **Donation of eyes lead to blindness in the next birth** | | | 0.44 |
| Yes                                            | 4 (1.06)   | 1 (0.26)     |            |
| No                                             | 233        | 105          |            |
| May be                                         | 12         | 2 (0.53)     |            |
| Don't know                                     | 14         | 3            |            |
| **Prohibited entry in the heaven after eye donation** | | | 0.15 |
| Yes                                            | 24         | 4 (1.06)     |            |
| No                                             | 196        | 92           |            |
| May be                                         | 27         | 7            |            |
| Don't know                                     | 17         | 8            |            |

Continued.
280 (74.7%) students had the knowledge that the cornea is used for eye donation and only 360 (96.0%) knew that people of any age can donate eyes. 287 (76.5%) students knew that people suffering from hepatitis B & C cannot donate eyes. After enucleation, no disfigurement of face of donor happen was known to 260 (69.3%) students (Table 1).

No myth like people who donate their eyes may be born blind in their next birth were prevailing among 338 (90.1%) students. 252 (67.2%) students were aware about no financial transaction to the relatives of donor for eye donation and 188 (50.1%) students knew that corneal blind recipient gets cornea free of cost (Table 2).

Difference between male and females about the awareness of eye donation, willingness to pledge eyes, reasons for not pledging the eyes and awareness about the location of eye bank in Uttarakhand was significant with p value (0.04, 0.00, 0.02 and 0.04) respectively (Table 3).

Difference between male and females about the knowledge regarding which, part of the eye can be utilized after eye donation, place of eye donation, what to do for eye donation in the event of a death, facial features after donation was significant with p value (0.00, 0.00, 0.02 and 0.04) respectively (Table 3).

| Responses                                      | Male N (%) | Female N (%) | P value |
|-----------------------------------------------|------------|--------------|---------|
| Do the relatives of donor get any money for eye donation? |            |              |         |
| Yes                                           | 31         | 17           | 0.53    |
| No                                            | 176        | 76           |         |
| May be                                        | 31         | 11           |         |
| Don't know                                    | 26         | 7            |         |

| Corneal blind recipient gets cornea free of cost | Yes | No | May be | Don't know |
|-------------------------------------------------|-----|----|--------|------------|
| Yes                                             | 137 | 51 |        |            |
| No                                              | 69  | 32 |        |            |
| May be                                          | 34  | 16 |        |            |
| Don't know                                      | 24  | 12 |        |            |

P - P value statistically significant calculated by Pearson Chi-Square.

Though 61.1% were willing to pledge their eyes in the current study but only 12% pledged their eyes out of which 7.2% were students who were ≥18 years of age rest 4.8% students motivated their parents and grandparents to pledge their eyes. Krishnaiah et al conducted a study on awareness of eye donation in the rural Indian population of all ages showed that only about one fifth of those aware of eye donation pledged their eyes, which is quite less as compared to the current study in which 12% pledged their eyes, it could have been more pledging but major chunk of the students involved were less than 18 years, which shows that students are important determinants in promoting eye donations as they are the future potential donors.

Biswa et al reported that media publicity plays an important role to increase awareness of eye donation and to educate the students who can act as motivators for enhancing eye donation and increasing eye health care awareness in the community which holds true for the current study where media was responsible for awareness among 12% of the students. This shows that mass media alone is not sufficient for awareness regarding eye donation, but there is a great need to educate students about preventive and curative aspects of corneal blindness and they can motivate their friends and family members about eye donation.

A cross-sectional study done by Simon George and Prashob Mohan on awareness, knowledge and attitude to eye donation among the residents of Thiruvananthapuram, Kerala State, India concluded that although Thiruvananthapuram has a high level of awareness about eye donation, significant number of people are unwilling to donate their eyes mainly due to their misconceptions. Similarly in current study 23.2% students believed in the myth that after eye donation soul gets prohibition of the entry into heaven and 9.9%
believed that they will get blindness in next birth after eye donation.

It is expected that the number of individuals with unilateral corneal blindness in India will increase to 10.6 million by 2020. So long as there is a properly documented will of the donor and written consent of relatives, no law prevents removal of donor eyes for corneal grafting. Higher secondary school students are the future citizens for the country. If they are sufficiently educated about eye donation they can spread the message among their friends and family members. Thus they will act as important motivators and ultimately enhance eye donation rates in our country.

Corneal transplantation being the most successful of all organ transplantation remains the major treatment option for various corneal pathologies and it prevent corneal blindness. Backlog of corneal transplantation can be cleared by increasing the corneal procurement and its further utilization. It is very important for people to be aware of time limit for eye donation as it may not be useful to utilize eyes for donation that are donated later than 6 hours after death. In the present study 95.5% students were aware about the ideal time required for corneal donation which is higher than George et al (79.5%) and Bhandary et al (88%).

A similar result was found in a preliminary survey conducted by the Aravind Eye Care System on the level of awareness of eye donations in an adult population of the state of Tamil Nadu in southern India. In the present study males were more aware and were ready to pledge eyes and there was significant difference on the awareness and attitude towards eye donation between both gender. In contrast Krishnaiah et al reported that females were less willing to pledge eyes but there was not any significant association between gender regarding willingness to donate eyes. It is our moral responsibility to motivate school going students, illiterates and rural population for this noble cause. It might be a good idea, if managers of movie theatres are motivated to present a video show on the importance and reasonable details of eye donation at the time of screening the movie. This could have a greater impact if any presentation on eye donation can be broadcasted by a prominent film stars or sport persons. There is also a great need to educate students in all fields, medical professionals about eye donation, so as to enable the younger generation to act as future motivators for enhancing eye donation rates. Studies have shown that training of staff is significantly associated with higher rates of donation.

The consent of the family is of utmost importance for eye donation as the pledge can be respected only if the family consents for eye donation so involvement of the governmental and non-governmental organizations should participate in training the hospital medical staff, nurses and counselors who can motivate positively the next of the kin of the deceased for eye donation whenever there is a death.

Grief counseling of relatives by hospital medical staff following death in the hospitals has been successful in procuring organs.

Indian legislation needs modifications to enhance eye donation like in USA the Presumed Consent Law which means if the dead person has not registered any objection to donate while alive, consent is presumed and eyes can be removed as required. In India we do not yet have such legislation; the government should introduce the concept of "presumed consent" to boost eye donations. Such legislation would emphasize the government's commitment to the cause of eye donation. Another area of legislation is the "required request law" wherein it becomes mandatory for all health care staff institutions coming into contact with families to make a request for eye donation.

CONCLUSION

The data from the present study suggest that students need more awareness regarding eye donation. To translate awareness into action appropriate strategies have to be developed to increase the knowledge about eye donation. It is encouraging that male students were predominantly ready to pledge their eyes and were found more motivated. More focus is required for enhancing the eye donation by making the school going students mainly females as they are the future citizen who will imply all the strategies for this noble cause. Although awareness regarding eye donation is high, there is lack of knowledge and motivation related to eye donation and the myths are still prevailing in the society despite being highly aware.

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