

# Knowledge and Attitude on Eye Donation among Undergraduate Medical Students of Kathmandu University School of Medical Sciences, Nepal

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## ABSTRACT

### Background

Corneal blindness accounts for a significant proportion of avoidable visual impairment in developing countries. Eye donation is voluntary and awareness in undergraduate medical students being a future practitioner in any field are expected to be linked to patients during death in hospitals.

### Objective

To assess the awareness of medical students on eye donation at Kathmandu University School of Medical Sciences (KUSMS).

### Method

This was a cross-sectional study conducted among undergraduate medical students of KUSMS. Students' responses were recorded using a predesigned, pretested, semi-structured questionnaire inquiring knowledge and attitude of eye donation, sources of information, their willingness to donate eyes as well as the reasons for donating/not donating eyes.

### Result

Less than half of the medical students (45.6%) were aware of eye donation only after death. Newspapers (72.2%) were the major source of information. The final year medical students were more aware (Average knowledge score =  $11.56 \pm 2.05$ ) than their juniors. 80.7% of the students were willing to donate their eyes. The adjudged reasons for willingness to donate were that eye donation is a noble work and pleasure in helping a blind person while the reasons for unwillingness to donate were lack of awareness followed by family objection to eye donation.

### Conclusion

Future medical practitioners possessed satisfactory knowledge about eye donation. Educating this cadre of human resources to sensitize them towards the need for eye donation would be a crucial step towards reducing the global burden of corneal blindness.

## KEY WORDS

*Attitude, Eye donation, Knowledge, Medical students, Transplantation*

## INTRODUCTION

Corneal diseases constitute a significant cause of visual impairment and blindness in the developing part of the world.<sup>1</sup> Retinal diseases are the most important causes of blindness (40-54%) in established economy nations while cataract (44-60%) and corneal diseases (8-25%) are the most common causes of blindness in countries with less developed economies.<sup>2</sup> Corneal blindness is the second leading cause of blindness in most developing countries after cataract.<sup>3</sup> According to Nepal blindness survey 1981, corneal trauma and ulceration is second leading cause of unilateral visual loss after cataract accounting for 7.9% of all blind eyes.<sup>4</sup> The major causes of corneal blindness included trachoma, corneal ulceration following xerophthalmia due to vitamin A deficiency, ophthalmia neonatorum, and use of harmful traditional medicines, onchocerciasis, keratoconus, leprosy, corneal dystrophies and ocular trauma.<sup>5-7</sup> Cost of cornea transplant, unavailability of corneas, makes it impossible for the underprivileged population to access these medical remedies.<sup>3</sup> Creating awareness among medical practitioners and the general public encouraging them to pledge their eyes for donation is indispensable and is an important step to achieve more donors for eye donations.

This study aimed to assess the knowledge and attitude about eye donation among medical undergraduate students. They can be well informed about the eye donation scenario in our country, inspire eye donation and also make them act as a moderator in increasing awareness about eye donations in public. In the context of Nepal, no such studies have been done previously.

## METHODS

This study was a cross-sectional, descriptive, and observational type of study. The study population included the undergraduate medical students from the 1<sup>st</sup> to the 4<sup>th</sup> year of KUSMS. A predesigned, pretested, and a semi-structured questionnaire was given to the students for eliciting responses.<sup>3,8</sup> The questionnaire consisted of 33 questions that covered five areas thought to impact eye donation: (1) Demographic details (2) knowledge of eye donation and transplantation (3) Attitudes of students on eye donation (4) sources of information (5) reasons for willingness or unwillingness.

The knowledge of all medical undergraduate students on eye donation was assessed using a 16 points scale. There were 16 multiple choices and yes/no questions carrying a total of 16 correct responses. Each correct response was given a score of 1 and a wrong response or no response was given a score of 0. The respondents were categorized as having good, satisfactory or poor knowledge based on the score as following i) 13 - 16 good knowledge, ii) 8 - 12 satisfactory knowledge, iii) 0 - 7 poor knowledge.<sup>3</sup> Data

were collected for two months in January and February 2016.

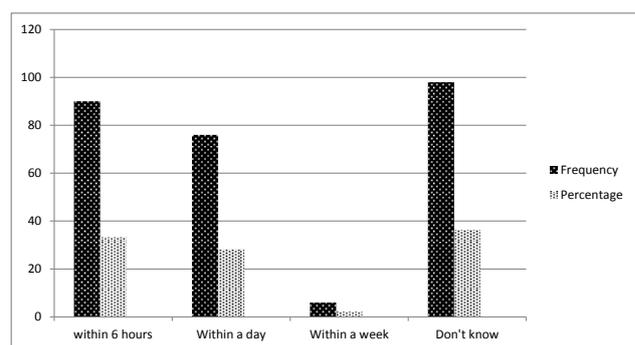
Statistical analyses were performed using Statistical Package for the Social Sciences (SPSS 16.0). Descriptive tabulations and chi-square tests were applied to generate descriptive information from qualitative data assuming normalcy.

Responses were made anonymous and participants were made aware of this fact before participation in the study. Written consent was obtained from each participant. The study followed the approval from the Institutional Review Committee (IRC-KUSMS).

## RESULTS

The mean age of 270 undergraduate medical students (n = 169 males and 101 females) was 20.67 years  $\pm$  1.42 years. There were 60, 69, 71, and 70 participants from 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> year respectively.

Out of the total participants, the majority (98.14%) of them knew that eyes could be donated; however, 93.3 % of students were still eager to learn and know more about eye donation. Less than half (45.6%) of them knew that eyes can be donated only after death. Almost three-quarters (71.9%) of the participants knew that the consent for Eye donation is given by the next of kin, while 11.5% responded that the consent is not required, 15.9% did not know with whom to take consent and 0.7% mentioned friends as the one to take consent from. Only one-third of the students knew that the ideal time for donating an eye is within 6 hours after death, while (36.3%) did not know the ideal time for eye donation followed by (28.1%) within a day and (2.2%) within a week.



**Figure 1. Ideal time for Donating Eyes after Death**

Only 42% of the students knew that a person with communicable diseases (Rabies, syphilis, hepatitis etc.) cannot donate eyes. Around half of the respondents (N=140, 51.85%) knew that a person with HIV cannot donate eyes. About two-thirds of the students answered that a person with a history of refractive surgery cannot donate eyes. Only 27% of the students knew of the possibility of eye donation by a person with cataract. Similarly, 60.4% of total students responded affirmatively on eye donation by a person with

a history of Diabetes, Hypertension and asthma, while, majority (87%) acknowledged that person using spectacle or having refractive error can donate eyes. The fact that corneal donation can only cure corneal blindness and no other form of blindness was known to 96% of the students. As many as 96% of the students knew that only cornea is donated as an eye donation and not the whole of the eyeball. More than half (56.7%) of the students knew about keeping the name of donor and recipient secret. However, more than a quarter (30.4%) responded as the identity to be revealed to both donor and recipient.

Almost half (47.8%) of the participants were unaware of the immediate measure to be taken to preserve the eyes after death. Only 83 (30.7%) students knew that eyes should be closed after death. While 14.8% of the participants retorted that closing or opening the eyes would not matter, 6.7% responded as the eyes need to be kept open.

Most students (71.1 %) of the students knew that eyes could not be bought or sold and 78.5% of the students were aware that a donor could be of any age and sex.

The average knowledge score of all the participants was  $10.02 \pm 2.07$  (range, 5-15). Average knowledge score of the first year, second year, third year and fourth-year students were  $8.98 \pm 1.62$  (range, 6-13),  $9.65 \pm 1.89$  (range, 5-14),  $9.73 \pm 1.76$  (range, 6-14) and  $11.56 \pm 2.05$  (range, 5-15) respectively. More than half of the participants (63.7 %) had satisfactory knowledge about Eye Donation.

Many of the students responded to more than one source of information on eye donation. Newspapers (72.2%) were the important sources of information on eye donation for a majority of the students followed by television (66.70%) and friends (57.00%) (fig. 2).

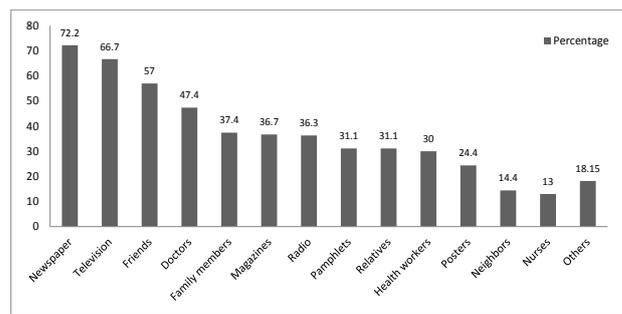


Figure 2. Sources of Information

More than three-quarters (80.7%) were willing to donate their eyes; however, the majority (72.2%) of them did not know where to contact for eye donation.

When asked about consent for donation, more than two-thirds (67.4%) were aware that it is mandatory and will be before death by the donor while 15.2 % and 14.1% responded as optional at the discretion of the donor alone and mandatory but after death by an adult family member respectively.

Significant number (89%) of the respondents knew about the shortage of eye donors in Nepal. One hundred ninety students (70.40%) responded that eye donation can be facilitated if someone from an eye donation center comes and asks for an eye donation upon the death of a person.

The perceived reasons for willingness (101 responses) for eye donation were that eye donation is a noble work (37.4%) and getting pleasure to help a blind person (37.4%) (Table 1)

Most appropriate reasons (112 responses) for unwillingness for Eye Donation was lack of awareness about eye donation (41.52%, N=270) followed by family members objecting to eye donation (15.2%, N=270) (Table 2).

Table 1. Reasons for willingness for eye donation

Options	Very Important	Important	Somewhat Important	Not Certain	Not Important	Stated reason is the single most important (N=270)
Donated eyes can good results	86(31.9%)	107(39.6%)	31(11.5%)	35(13%)	11(4.1%)	36(13.3%)
A friend or relative has received a donated eye	43(15.9%)	37(13.7%)	52(19.3%)	96(35.6%)	42(15.6%)	17(6.3%)
A friend or relative has a donated eye	47(17.4%)	83(30.7%)	54(20%)	47(17.4%)	39(14.4%)	8(3%)
Eye donation is noble work	167(61.9%)	68(25.2%)	23(8.5%)	9(3.3%)	3(1.1%)	101(37.4%)
It is pleasure to help a blind person	181(67%)	61(22.6)	16(5.9%)	9(3.3%)	3(1.1%)	101(37.4%)
Impressed after reading an article	44(16.3%)	78(28.9%)	75(27.8%)	43(15.9%)	30(11.1%)	3(1.1%)
Impressed after attending a lecture/seminar/symposium	35(13%)	70(25.9%)	103(38.1%)	46(17%)	16(5.9%)	3(1.1%)
Impressed after seeing a movie/documentary	44(16.3%)	67(24.8%)	94(34.8%)	43(15.9%)	22(8.1%)	1(0.4%)

**Table 2. Reasons for unwillingness for eye donation**

Options	Very Important	Important	Somewhat Important	Not Certain	Not Important	Stated reason is the single most important (N=270)
Lack of awareness about eye donation	160(59.3%)	71(26.3%)	20(7.4%)	7(2.6%)	12(4.4%)	<b>112(41.5%)</b>
Family members object to eye donation	61(22.6%)	103(38.1%)	64(23.7%)	18(6.7%)	24(8.9%)	<b>41(15.2%)</b>
Feels that body is ill-treated by eye donation	29(10.7%)	76(28.1%)	58(21.5%)	51(18.9%)	56(20.7%)	5(1.9%)
Dislike of separating eye from body	31(11.5%)	78(28.9%)	62(23%)	36(13.3%)	63(23.3%)	19(7%)
Feel unsuitable to donate eye because of my age	25(9.3%)	58(21.5%)	82(30.4%)	51(18.9%)	54(20%)	15(5.6%)
Feel unsuitable to donate eyes because of health problems	37(13.7%)	83(30.7%)	82(30.4%)	37(13.5%)	31(11.5%)	18(6.7%)
Eye donation will delay funeral and other religious rites after death	37(13.7%)	52(19.3%)	49(18.1%)	46(17%)	86(31.9%)	24(8.9%)
Body organs shouldn't be separated after death because of religious reasons	30(11.1%)	60(22.2%)	46(17%)	35(13%)	99(36.7%)	11(4.1%)
Signing an eye donor's card feel like signing a death certificate	12(4.4%)	37(13.7%)	48(17.8%)	57(21.1%)	116(43%)	17(6.3%)
Corneal transplantation yields poor results	10(3.7%)	33(12.2%)	51(18.9%)	109(40.4%)	67(24.8%)	8(3%)

## DISCUSSION

Our results show that the medical students had a satisfactory level of knowledge (mean score  $\pm$  SD, 10.02  $\pm$  2.07) about eye donation. Two-thirds of them were unaware of ideal time for eye donation and immediate measures to be taken to preserve the eyes. Less than half only knew about who can/cannot donate. Majority of the students were willing to donate, considering it as a noble act and helping a blind. More than half of the students considered the unwillingness to donate eyes as lack of awareness and family objection.

Health in a community or a society largely depends upon the active role and participation of a medical doctor in health education and being a good role model in the society. However, in many underdeveloped and developing countries like Nepal, decision of eye the donation is ultimately done by family members. Therefore, it is important to counsel the family members. Many potential donors may be missed if doctors fail to counsel family members about eye donation and if they lack sufficient knowledge about eye donation to answer questions or concerns of family members after the death of the donors. Hence, this study was carried out to assess knowledge and attitude of medical students on eye donation and, if not, to identify areas that could be targeted by modifications in the future curriculum.

In promoting eye donations, the level of knowledge and attitude of medical students are important determinants,<sup>9</sup> since they are the future potential doctors and this study revealed some hard facts which should be deliberated upon. Almost all (98%) of the medical students knew about

corneal donation similar to prior studies, but only half of them had clarity that corneal donation is post death, which implies that half of them have poor knowledge in this context.<sup>3,8-10</sup> Present study showed that majority of the students (96%) knew that eye donation can only cure corneal blindness. Other blindness apart from corneal causes cannot be treated with eye donation. This fact is very important to be shared with clients, either donor or recipient, so that they might not have false hope or expectation. Awareness about consent information (71.9%) was much higher than earlier studies; however it was incomplete and so was the provision of confidentiality.<sup>3,8,9</sup> The duration of tissue retrieval was unclear to almost two-third (66.1%) of the students similar to studies by Singh et al. and Bharti et al. but was contradicting to studies by Sadana et al. and Kumar et al.<sup>3,8-10</sup> Similarly, almost half (47.8%) of the participants did not know the immediate measure to preserve the eyes after death. The student responses on the suitability of the potential donors were mixed. Compared to the prior studies, the awareness about eye donation by a person wearing glasses was significantly higher in this study.<sup>3,10</sup> This study showed that only 27% of the students knew that a person with cataract can also donate eyes. As almost all will have cataract in their life, if they are not counseled properly, medical doctors might reject them as excluded and many persons with cataract won't pledge for donation. We had similar proportion (51.85%) of students who knew that HIV infected person cannot donate eyes but was significantly low as compared to a study by Kumar et al.<sup>3,10</sup> Furthermore, 58% of the students were unaware that people with communicable

diseases (Rabies, Syphilis, Hepatitis etc) cannot donate eyes. Our study had a significantly higher proportion of participants who were aware that people who have undergone refractive surgery can donate eyes compared to the prior literature.<sup>3,10</sup> Around 28.9% of students thought that eyes could be bought and sold. Unlike other donations, eye donation occurs after death and no cost is involved for both donor and recipient. More than two-third of the participants were unable to name or locate an eye bank in this study which depicts a low level of knowledge among the medical students. All of this crucial information is very important for advocacy and is to be conveyed to the donor's family members when required. Knowing this fact, they will contact the responsible authority in time and hence the cornea can be harvested timely making it appropriate for transplantation.<sup>11,12</sup> Delay in contact by family member means delay in harvesting and thus may not prove good for therapeutic use.

Newspapers (72.2%) are the important sources of information on eye donation for majority of the students, followed by Television (66.7%) concurrent to the existing literature.<sup>3,8-10</sup> Newspaper being the mostly read by students and Television being another most common form of recreation among these age groups become the most important sources of information.<sup>8,9</sup> The knowledge source was majorly newspapers, television or friends and that eye donation is not echoed in the curriculum of the medical courses. This reason may stand out to explain the level of knowledge as satisfactory in our study participants. In addition, the level of knowledge of the fourth year students is on average higher than the respective year medical students. Integrating the concept of tissue and/or organ donation early in the curriculum may even the knowledge among the medical students.

In our study, majority (80.7%) of respondents were willing to pledge their eyes after death in agreement with the literature which is positive step towards eye donation.<sup>3,8,9,13</sup> Those who were willing to donate eyes, 84.40% reported to donate eyes for those who are in need and considering it as an act of nobility similar to prior studies.<sup>3,8</sup> This is a good attitude which removes biasness and extend eye donation

to all needy irrespective of wealth, sex and closeness. This will not confine eye donation only among friends and family members. On the other hand, most prevailed reasons for not donating eyes were lack of awareness on eye donation in 59.3% of the students followed by objection by family members among 22.6% of the students consistent with the literature.<sup>3,8-10</sup> Hostility towards eye donation by family members shall also be overcome if the population was educated.<sup>10</sup> Considering the awareness about the lack of tissue for corneal transplantation, 89% of the respondents had an attitude that there is shortage of eye donors in Nepal. We, therefore, should also be attentive towards the remaining percentage of participants who were not willing to donate eyes and focus on educating medical practitioners about organ donation in their early career.

This study, conducted in a cohort of medical students from a single university provides initial findings that the students possess incomplete knowledge about eye donation. Therefore, it warrants future multicentric studies involving larger samples to confirm the findings.

## CONCLUSION

To summarize, our study suggests that a lot more can be done to augment the education of the medical students as they are going to be a focal point of contact to promote eye and organ donation. Their poor or incomplete information itself will dissipate moderately and cannot educate the public. Training on the same should be incorporated early in their curriculum as this may take them far ahead in assisting the society to reduce the burden of corneal blindness by promoting corneal donation. Major reasons for not donating eyes were lack of awareness, objection from family members and other reasons being religious belief, health issues and fear of disfigurement. These findings have been derived from medical students and though satisfactory, are not up to the mark to become a good spokesperson. Hence it is of immense necessity to broaden the scope of eye donation in the syllabus of medical students. This should be further extended to the reach of the general public as well.

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