Awareness of Eye Donation among University Students

Shailesh Mani Pokharel,[1] Nabin Lamichhane,[1] Sushil Regmi[1]

[1]Purbanchal University Faculty of Medical and Allied Sciences, Gothgaun, Morang, Nepal.

ABSTRACT

Backgrounds: Eye donation is an act of donating, one's eyes, mostly the cornea after his/her death. According to World Health Organization (WHO) estimates every 5 second, someone goes blind. There are currently about 45 million blind people in the world which increases by 1 to 2 million every year. The study aimed to identify and explore the awareness of eye donation among university students in Morang, Nepal.

Methods: A descriptive cross-sectional study was conducted on Undergraduate Students of Purbanchal University School of Health Sciences a constituent college of Purbanchal University situated in Sundarharaicha Municipality of Morang District of Nepal. Population proportionate simple random sampling technique was applied to allocate the sample size.

Results: Among the total of 177 respondents, 22.0% are from the Pharmacy faculty, 22.6% from Public Health, and 55.4% from Nursing. Out of the total respondents, 98.9% were aware of eye donation, while only 1.1% had no awareness. About 86.9%, of the respondents correctly identified the cornea as a donatable part. However, a smaller percentage mentioned the retina (4.0%), eye ball (6.9%), and lens (2.3%).

Conclusions: The findings of the study on awareness of eye donation suggest the need for targeted educational interventions to enhance understanding the parts of eye for donation and avoiding the misconceptions about various aspects of eye donation among Health Sciences students.

Keywords: Awareness; eye donation; health science students.

INTRODUCTION

Eye donation is an act of donating, one's eyes, mostly the cornea after his/her death. World Health Organization (WHO) reports that every 5 seconds someone loses their sight, contributing approximately 45 million blind people in the world[1] and this rate continues to rise each year. Corneal damage is second most common cause of visual impairment and blindness which comprises about 6-8 million cases in the world.[2] Corneal blindness is caused by trachoma, corneal ulceration following xerophthalmia due to vitamin A deficiency, ophthalmia neonatorum, and the use of harmful traditional medicines, onchocerciasis, leprosy, and ocular trauma.[1] Globally, blindness due to corneal disease is second to cataract .[3] In the developing world, ocular trauma and corneal ulcer are significant cause of corneal blindness.[4] Corneal blindness caused by ocular trauma and corneal ulceration are significant which is underreported in most cases.[5] The significant disparity between demand and supply in eye donations exists due to low awareness.[6]

METHODS

A descriptive cross-sectional study was conducted on undergraduate students of Purbanchal University School of Health Sciences (PUSHS), a constituent college of Purbanchal University situated in Sundarharaicha Municipality of Morang District Nepal. Population proportionate simple random sampling technique was applied to allocate the sample size. The study considers 95% CI and 80% power to estimate the sample size. According to the literature review, about 38.2% of the population knew the ideal time of eye donation[10] and the sample size estimated was 177.

Correspondence: Nabin Lamichhane, Purbanchal University Faculty of Medical and Allied Sciences, Gothgaun, Morang, Nepal. Email:2021nabinlamichhane@gmail.com, Phone +9779852027692.

Data was collected from the graduates physically using a structured questionnaire. Graduates who were not willing to participate in the survey are excluded from the study. The enrolled participants were asked to fill the questionnaire physically. There was no external assistance to answer the questions. The participants were asked to fill the form immediately and return it back to the collector.

A set of questionnaires related to the awareness of eye donation was formulated as tool of study. A tool was designed after extensive review of literature and consultation with subject experts. The tool was pre-tested among the 20 students of Health Science programs under Purbanchal University in the different colleges at Biratnagar and Kathmandu. A pretested questionnaire was applied to find out the awareness and perception regarding eye donation. After, the pre-test the questionnaires were revised, modified by the answerability of the respondents and the feedbacks from the subject expert.

Collected data was entered at Microsoft excel 2010 and converted into the SPSS 20.0 for statistical analysis. A chi-square test was applied to find out the significant association between awareness and other selected variable at 95% CI where level of significance considered as $P < 0.05$.

The written permission was taken from the authority of Purbanchal University School health sciences for the research work and ethical approval was obtained from Institutional Review Committee of Purbanchal University School of Health Science (Ref. No. 29-2078/79 issued on 2078/08/24 BS)which is recognized by Nepal Health Research Council. Data was collected during the months of March and April of 2022.

RESULTS

The study was carried out among the undergraduates Health Sciences students of Purbanchal University School of Health Sciences, Gothgaun, Morang. The students across different faculties Pharmacy, Public Health, and Nursing from different semesters and years were enrolled in a study. Among the total of 177 respondents, 22.0% were from the Pharmacy faculty, 22.6% from Public Health, and 55.4% from Nursing.

Among the entire group of participants, 98.9% were aware of eye donation, while only 1.1% had no awareness. The most common modes of awareness were books (32.6%), teachers (24.6%), and social media (21.7%). Other sources included the internet (11.4%), news (17.1%), Radio/TV (17.1%), and movies (21.7%). A study conducted in Kathmandu among undergraduates' medical students found newspaper was the major source of information.[12]

The majority, 86.9%, of the respondents correctly identified the cornea as a donatable part. However, a smaller percentage mentioned the retina (4.0%), eye ball (6.9%), and lens (2.3%). This indicates that while awareness of cornea donation is high, there may be room for improvement in understanding other potential eye donations.

A significant portion, 29.1%, of the respondents did not know the ideal time and on the contrary, 70.9% demonstrated awareness of the appropriate timeframe of eye donation. Among those who knew, responses varied regarding the time after death, with different percentages for each time range. This suggests a mixed level of understanding among students on this critical aspect of eye donation.

A majority, 60.0%, believed not everyone could donate, while 40.0% correctly acknowledged that anyone can donate. The subsequent details provided insights into why some individuals might be considered ineligible for eye donation, with categories such as eye disease, NCD, no consent, senile child, and viral reasons mentioned.

More than half, at 51.4%, expressed that they were not considering pledging. In contrast, 48.6% were open to the idea of pledging. The survey further explored students' opinions on whether their close relatives should pledge for eye donation, revealing that a substantial 75.4% supported the idea.

Only a small percentage, 17.1%, knew someone who had donated, and an even smaller proportion, 13.7% knew someone who had received a donated eye. Additionally, the survey assessed awareness of where to contact for eye donation in Nepal, with 93.1% having this knowledge.

The majority, at 65.1% believed there was no financial gain in eye donation. Regarding disfigurement, 76.0% of students thought there would be no such effect on the face after eye donation, while 24.0% believed there might be disfigurement. These insights reflect the prevailing attitudes and understanding among the students regarding these important aspects of eye donation.

The findings of the study regarding awareness of eye donation were discussed on the basis of the available literatures, research articles and the expert opinions. Some of the major findings of the respondents are

compared categorically by applying chi-square test and discussed according to the published research.

This section provides information about which part of the eye is donated and the awareness of the ideal time for eye donation after the donor's death.

Table 1. Donor Information regarding awareness of eye donation.(n=175)

Variables	Faculty			P values	Remarks
	Pharmacy	Public Health	Nursing		
Which part of eye is donated?					
Cornea	32 (82.1)	25 (64.1)	95 (97.9)	<0.001	Significant
Retina	4(10.3%)	1(2.6%)	2(2.1%)		
Eyeball	0	12(30.8%)	0		
Lens	3(7.7%)	1(2.6%)	0		
Do you know the ideal time for eye donation after the donor's death (in hours)?					
Know	13 (33.3%)	14 (35.9)	24 (24.7)	0.349	Not Significant
Don't Know	26(66.7%)	25(64.1%)	73(75.3%)		

Table No. 1 shows Cornea is the most commonly donated part, with a significant difference between faculties. Retina and lens are also donated but less frequently. Eyeball donation was only mentioned by the public health students. Cornea transplanted from the donor eye was known to 86.85% which is higher than the study conducted to the Malaysian students.[7] In a study by Manjunath S Nekar et al.,[8] 62.2% thought that whole eyeball is transplanted to restore vision which is higher compare to our study where there is only 6.85%.

Similarly, the table shows most respondents do not know the ideal time for eye donation. There is no significant difference between faculties in terms of this knowledge. The whole eye extracted from the donor can be stored in the refrigerator (moist chamber technique) up to 48 hours before transplantation, the corneo-scleral button extracted from the donor's eye and conserved in Optisol medium, can be stored for a period of up to 14 days before it is utilized for transplantation.[7] In the same study only 29.14% of them knew that the donor eye can be stored upto 24 hours before transplantation which is high as compared to 11.5% in the study of MK Bharty. Knowledge regarding the number of hours after death within which eye should be removed for donation was poor (27.13%) in this study as compared to college students at Hubli.[8]

Table 2. Recipient Information Regarding awareness of Eye Donation. (n=175)

Categories	Faculty			P values	Remarks
	Pharmacy	Public Health	Nursing		
Can everyone benefit from donated eyes?					
No	24(61.5%)	21(53.8%)	59(60.8%)	0.721	Not Significant
Yes	15(38.5%)	18(46.2%)	38(39.2%)		

The Table No. 2 explores the whether everyone can benefit from donated eyes. The majority believe that not everyone can benefit from donated eyes. There is no significant difference between faculties in this perception.

Table 3. Pledging for Eye Donation, awareness and experiences. (n=175)

Variables	Frequencies			P Value	Remarks
	Pharmacy	Public Health	Nursing		
Have you ever considered pledging for eye donation?					
No	14(35.9%)	10(25.6%)	66(68.0%)		
Yes	25(64.1%)	29(74.4%)	31(32.0%)		
Would you encourage your close relatives to pledge for eye donation?					
No	11(28.2%)	9(23.1%)	23(23.7%)	0.834	Not Significant
Yes	28(71.8%)	30(76.9%)	74(76.3%)		
Do you personally know anyone who has donated an eye?					
No	31(79.5%)	32(82.1%)	82(84.5%)	0.770	Not Significant
Yes	8(20.5%)	7(17.9%)	15(15.5%)		
Do you personally know anyone who has received a donated eye?					
No	36(92.3%)	31(79.5%)	84(86.6%)	0.256	Not Significant
Yes	3(7.7%)	8(20.5%)	13(13.4%)		

The table No. 3 indicates whether individuals have considered pledging for eye donation and whether they would encourage close relatives to do so.

A significant difference exists between faculties regarding whether individuals have considered pledging for eye donation. While 98% of the students in our study were familiar with the concept of eye donation, only 48.5% expressed a willingness to pledge their own eyes. Additionally, 75.42% were willing to donate their relatives' eyes. This willingness among students is higher than in previous studies involving a smaller sample of students. [9-11] Notably, nursing students exhibited a lower inclination to donate eyes, with only 32% expressing willingness, in contrast to the higher rate of 85% observed in Bangalore. [10]

Similarly, most respondents are willing to encourage close relatives to pledge for eye donation. There is no significant difference between faculties in this regard. Our study reports that only 75.42% students were willing to donate their close relative's eyes. A study conducted by Sanjeev et al. among medical, paramedical, and nursing students reported willingness to donate a close relative's eyes in 22% participants whereas only 10.4% subjects were willing to donate a close relative's eyes in a study by Boniface et al.[6,13]

Most respondents do not personally know anyone who has donated an eye. There is no significant difference between faculties in this regard. A smaller percentage of respondents personally know anyone who has received a donated eye.

The respondents were asked about the personal awareness and experience with eye donation.

In this study, 57 (32.6%) of students knew about the eye donation through books followed by 43 (24.6%) teacher,38(21.7%) social media and movie. Similar study done in Nepal, 81(44.8%) of students knew about eye donation through television followed by Internet 44 (24.3%), friends and relatives 18 (9.9%) or newspaper 14 (7.7%).[14] In contrast to our study, Singh MM et al reported, 77.8% of the students knew about eye donation via television.[11]

This section assesses whether respondents know where to contact for eye donation in Nepal.

Table 4. Awareness regarding the status of Eye Donation in Nepal. (n=175)					
Categories	Faculty			P values	Remarks
	Pharmacy	Public Health	Nursing		
Do you know where one should contact for eye donation in Nepal?					
No	0	3(7.7%)	9(9.3%)	0.149	Not Significant
Yes	39(100%)	36(92.3%)	88(90.7%)		

Form the Table No. 4, it can be discussed that most respondents do know where to contact for eye donation in Nepal. In our study,162(93%) of the students knew about the place for eye donation.

Pharmacy faculty seems to have a lower awareness in this regard, but the difference is not significant. Similarly, in the study conducted by Nekar MS et al reported that 74% of the college students at Hubli knew about eye banks in their vicinity.[8] However, study in Nepal observed that only 20 (10.8%) of the students knew about any existing eye bank in Nepal.[14]

Table 5. Impacts and Concerns regarding Eye donation among the respondents. (n=175)					
Categories	Faculty			P values	Remarks
	Pharmacy	Public Health	Nursing		
Do you think there is any financial gain associated with eye donation?					
No	33(84.6%)	24(61.5%)	57(58.8%)	0.014	Significant
Yes	6(15.4%)	15(38.5%)	40(41.2%)		
Is there disfigurement of the face following eye donation?					
No	24(61.5%)	32(82.1%)	77(79.4%)	0.053	Significant
Yes	15(38.5%)	7(17.9%)	20(20.6%)		

Table No.5, indicates a significant difference exists between faculties regarding the belief in financial gain associated with eye donation. 61(34.85%) of the student thinks there is financial gain with the eye donation. Similar to our study, Tiwari R, et al. evaluated the awareness of eye donation among postgraduate medical students. The investigation aimed to determine if the willingness to pledge eyes for donation was driven by a sense of charity, emphasizing that such acts benefit society and are entirely voluntary.[15]

Similarly, a significant difference exists between faculties regarding the belief in the disfigurement associated with eye donation. 42(24%) student thinks there is disfigurement of the face following eye donation. Similar study done by M. Lawlor et al. reported that 28(18%) of the people think corneal donation would cause mutilation or disfigurement of the body. They also mentioned about the concerns about disfigurement in donation follow a hierarchy, with donation of corneas raising more concerns than solid-organ donation.[16]

CONCLUSIONS

Majority of the students were familiar with the general awareness of eye donation. The findings of this study should give emphasis on the correct and similar type of understanding of different aspects of eye donation such as parts of eye donation, time and financial provisions of eye donation. The study suggests the need for increased awareness campaigns in local communities to promote eye donation and its benefits and should also address the development of educational programs to avoid the eye donation awareness related misconceptions.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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