



## AWARENESS OF EYE DONATION AMONG NURSING STUDENTS IN A NURSING COLLEGE IN RURAL SOUTH KERALA

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### ABSTRACT

#### Background

Corneal blindness is one of the leading causes of visual impairment in India. Despite the high demand for corneal transplants, the rate of eye donation remains significantly low, creating a substantial gap between need and availability. For this, awareness regarding eye donation is necessary.

#### Objectives

To assess the awareness, attitude, and knowledge regarding eye donation among nursing students.

#### Methods

A cross-sectional study conducted at the College of Nursing, Dr. SMCSI Medical College, Karakonam. A semi-structured questionnaire was used to collect the data from the students, and it was analysed.

#### Results

99.3% of the students were aware of eye donation. The mass media were found to be the major source of information. 31% were willing to donate their eyes. Their knowledge in the subject was limited, as only 38% knew the ideal time for eye removal after death, only 31% knew that it can treat only corneal blindness, and only 44% knew that the cornea is the part of the eye that is transplanted.

#### Conclusion

Although most participants were aware of eye donation, many lacked detailed knowledge and had not decided to donate. Reluctance was linked to personal beliefs, religious concerns, and fear about physical appearance. However, many showed willingness to support awareness efforts. Educating nursing students is essential as they are future healthcare professionals who can play a key role in promoting eye donation in the future.

**Keywords:** Corneal blindness, eye donation, awareness, knowledge.

### INTRODUCTION

Corneal blindness is one of the leading causes of blindness in India. Corneal blindness refers to a group of eye disorders that change the corneal transparency, causing corneal scarring and blindness.<sup>[1]</sup>

The prevalence of corneal blindness in India is estimated to be 0.9% according to the National Blindness and Visual Impairment Survey India 2015-2019, conducted by RP Centre Institute of Ophthalmology AIIMS, New Delhi.<sup>[2]</sup> Corneal blindness is the third most common cause of blindness in India. Aetiology of corneal blindness includes infective keratitis, vitamin A deficiency, trauma, pseudophakic bullous keratopathy, chemical injuries, keratoconus, and corneal dystrophies.<sup>[3]</sup> Ocular trauma and corneal ulceration are significant causes of corneal blindness that are often underreported but may be responsible for 1.5-2.0 million new cases of monocular blindness every year.<sup>[4]</sup>

Most of these patients may regain their vision through corneal grafting. Presently, in India, the donor eye collection is 22,000 eyes every year, which is insignificant with respect to the requirement.<sup>[5]</sup>

### **Rationale for the Study**

Keratoplasty is the only option for restoring visual acuity in patients with corneal blindness. However, the number of corneal transplants done in India is far less compared to the requirement. This is largely due to the inadequate number of donor corneas collected after death. Nursing students, being future healthcare providers, can promote eye donation significantly by creating awareness about eye donation among the public and at their place of work. For this, nursing students need to be aware of the protocols for eye donation. Most of the studies conducted on this topic are from other Indian states like Tamil Nadu or Karnataka. There are not many studies to assess the awareness of eye donation in Kerala currently. The present study is undertaken to assess the current awareness of nursing students regarding eye donation in our institution, which is in rural south Kerala.

### **Implication**

The number of corneal transplants done in India is far less compared to the requirement. This is largely due to the inadequate number of corneas collected, which is mainly due to the lack of awareness. Even those who are aware of eye donation are not aware of the ideal time for removal of the eyeball and contraindications for eye donation. The present study is undertaken to see if they require any additional awareness programmes.

A study by Gupta et al in 188 nursing students in Bangalore in the year 2009 showed that 96.8% knew about eye donation, but only 38.2% knew the ideal time of removal.<sup>[6]</sup>

In a study by Shadakshari SM et al conducted in 2018 in Karnataka among 380 nursing students, 72% were aware of eye donation, but only 28% knew the ideal time for removal. 93% were willing to pledge their eyes. Perceived reasons for not pledging eyes by the students were: lack of awareness (32%), the unacceptable idea of separating the eyes from the body (54%), objection by family members (68%), and religious beliefs (25%).<sup>[7]</sup>

A study by B. Lal et al conducted in 340 medical and nursing students in Goa in 2018 showed that 97.9% were aware of eye donation, but only 42% were willing for eye donation, and only 17.6% were aware that the whole eye can be removed.<sup>[8]</sup>

Chowdhury et al conducted a comparative study in 2021 among 112 medical and 115 nursing students in Odisha. The ideal time of eye donation was known to 69% of medical students and 60.9% of nursing students. 88.4% of medical students and 79.1% of nursing students were willing to donate their eyes in the future.<sup>[9]</sup>

Anita et al conducted a study in 2019 among 1803 paramedical staff and school students in Tamil Nadu regarding awareness on eye donation. 96.8% knew that it could be donated after death, and 55% knew that eyes were enucleated within 6 hours after death. 56.2% admitted that lack of awareness is the reason for not donating eyes; 23.8% said that the family members are objecting to eye donation.<sup>[10]</sup>

### **Research Question**

What is the percentage of nursing students who are aware of eye donation, the ideal time for eye retrieval, and the contraindications for eye donation?

## OBJECTIVES OF THE STUDY

- 1) Primary objective: - to determine the proportion of nursing students who are aware of eye donation,
- 2) Secondary objective: - to assess the knowledge and attitude of nursing students in nursing college in South Kerala towards eye donation

## MATERIALS & METHODS

The present hospital-based cross-sectional study was conducted in Dr. SMCSI Medical College Karakonam, Thiruvananthapuram, Kerala on 160 nursing students.

### Study Population

Nursing students in the third- and fourth-year batch in CSI College of Nursing, Dr SMCSI Medical College, Karakonam

### Inclusion Criteria

Nursing students who are willing to participate in the study Nursing Students in the third and fourth year of the CSI College of Nursing, Dr SMCSI Medical College

### Exclusion Criteria

1. Those who are not willing to participate in the study
2. Those who cannot respond to the questionnaire due to medical reasons.
3. Students of age less than 18years

### Sample Size

Data from a study by Shadakshari et al<sup>[7]</sup> was used for the calculation, in which 72% of the nursing students were aware of eye donation.

Sample size is calculated by using the formula

$$N = \frac{4pq}{d^2}$$

Where p = 72% (proportion of students with awareness)

$$q = 100 - 72 = 28\%$$

d = allowable error (5-20% of p)

$$\text{Sample size} = \frac{4 \times 72 \times 28}{(0.1 \times 72)^2}$$

$$= 156$$

### Sampling Technique

Non-probability convenient sampling

### Study Variables

Primary outcome variable: awareness of eye donation among nursing students. Secondary variables: the source of information, knowledge regarding ideal time for eye retrieval, indications and contra-indications for eye donation, whether a live person donate his eye or not, whether prior consent is necessary for eye donation and attitude regarding willingness for eye donation in future, whether they are willing donate their relative's eyes and whether they are willing to undertake eye donation campaign

### Operational Definitions

Corneal transplant: surgical process by which a diseased cornea is replaced by a healthy cornea from a donor.<sup>[11]</sup>

Eye donation: Eye donation involves the recovery, preparation, and delivery of donated eyes for corneal transplants and research. Eyes can be taken within 6 hours of the death of the donor. Eyes can be pledged, or consent can be given by a close relative.<sup>[12]</sup>

Eye bank: An Eye bank is a facility that collects, processes, and distributes donated eyes for research, education, and transplants.<sup>[13]</sup>

Corneal blindness: Blindness caused by corneal scarring and subsequent loss of transparency.<sup>[14,15]</sup>

### **Data Collection Methods**

Data collection began after the Ethics Committee's approval. A semi-structured questionnaire was used to collect the information.

Data collection was done by the principal investigator, after getting consent from the nursing college principal regarding time and convenience of the students. An information sheet and informed consent, both written in English, were handed over to the participants. After taking consent, the study was conducted using a questionnaire that contained 15 questions.

### **Study Tools**

Semi semi-structured questionnaire was used to collect the data from the participants.

The questionnaire included their age, sex, and the year of study for data collection.

The questionnaire was designed using questions used in previous studies done by Lal et al and Anita et al.<sup>[8,10]</sup> Section A of the questionnaire contains demographic data, and Section B has questions to determine if they are aware of eye donation and the source of information. Section C has questions to assess their attitude towards eye donation, whether they are willing to donate their eyes in the future, whether they will donate their relative's eyes, and if not willing, the reasons for unwillingness. Section D has questions to assess their knowledge on eye donation, whether a live person can donate their eyes or not, the ideal time after death for eye retrieval, indications, and contraindications for eye donation. Fifteen questions were framed and contents of the questionnaire were evaluated and validated by experts, and a pilot study was conducted among 10 students.

### **Data Entry and Analysis**

The data collected with the help of a questionnaire was entered and stored in Microsoft Excel. Statistical analysis was done with SPSS software (Statistical Package for Social Sciences, version 26). Qualitative variables were analysed using frequency and percentage. Quantitative variables were analysed using mean and standard deviation.

### **Ethical Considerations**

Institutional Ethics Committee clearance and permission from the institution's head was obtained before commencement of the study.

Investigators are not involved in the teaching activities/ academic assessment of the study participants, and they were given full liberty to participate or not to participate in this study. They were assured that their non-participation will not affect their course in any way whatsoever while handing them the information sheet. Privacy and confidentiality will be maintained during all stages of the study.

### **Benefit of the Study**

Spreading awareness of eye donation among nursing students so that they can become motivators in the future. Awareness of eye donation among nursing students will help us to know if there is any requirement for future teaching programmes on eye donation.

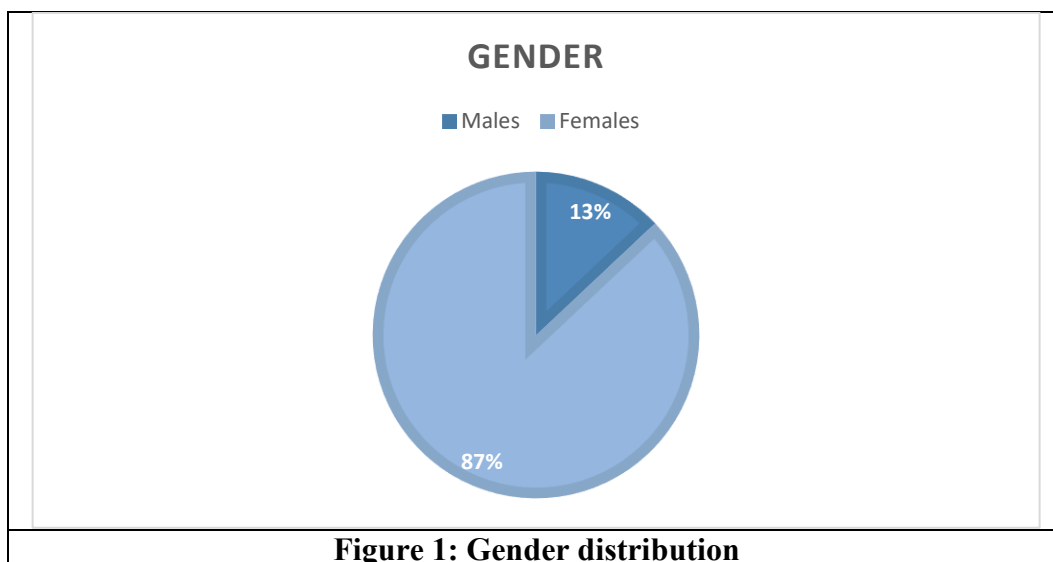
## **RESULTS**

Based on the data obtained from the questionnaire, the following observations were made.

### **Demographic data**

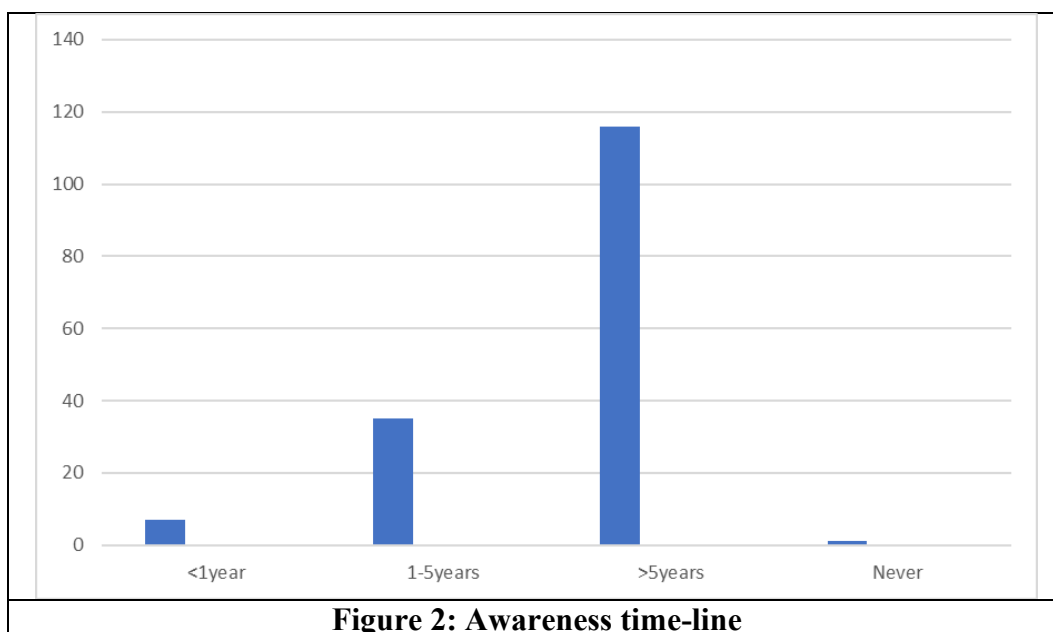
A total of 160 nursing students were included in the study. Out of this, 140 were females (87.5%) and 20 were males (12.5%)

Age varied from 19-23 years. 27 students (17%) were aged 19, 40 students (25%) aged 20, 56 students (35%) aged 21, 33 students (21%) aged 22, and 4 students (2.5%) were aged 23.



### Awareness on eye donation

159 students (99.3%) have heard about eye donation. Among these, 7 (4%) have heard about eye donation within the last 6 months. 35 students (22%) have known about this for 1- 5 years. 116(73%) have known about eye donation for more than 5 years and one person has never heard about this.



93 students (58%) got the information from the media, TV, or radio. 17 (11%) from newspapers, 4 (2.5%) from health workers, and 23 (14%) from their friends and family. 9 students (5.6%) have given others as the source of information

Source	Number	Percentage
Social media/ TV/ radio	96	60%
Newspaper	19	11.88%
Health workers	6	3.75%
Friends/ family	27	16.88%
Others	12	7.5%

**Table 1: Source of information**

### Willingness on eye donation

According to the answers to the questions regarding their attitude, 50 students (31%) are willing to donate their eyes, and 27 (18%) are not willing. 22 (14%) do not know, and 59 (34%) have written that they may decide later. 74% of them are ready to inform their relatives regarding their willingness for eye donation. Among those who are unwilling, 2 have given religious concerns as the reason, 10 people feel it will disturb the normal appearance, 20 have chosen the response of personal reasons, and 18 have chosen others as the reason for their unwillingness.

Question	Number	percentage
Are you willing to donate your eyes?		
Yes	51	31%
No	27	18%
Not decided	22	14%
Maybe later	60	37%

**Table 2: Willingness for eye donation**

### Attitude regarding eye donation

85 students (53%) were willing to donate the eye of a close relative, but 122 (76%) were willing to campaign for eye donation. 130 students (89%) do not know anyone who has donated their eyes.

Question	Yes	No
Are you willing to donate your eyes?	50 (31%)	27 (18%)
Are you willing to donate a close relative's eye?	85 (53%)	75 (47%)
Are you willing to campaign for eye donation?	122 (76%)	38 (24%)
Do you know anyone who has donated their eyes?	30 (19%)	130 (81%)

**Table 3: Attitude regarding eye donation**

### Knowledge on eye donation

Based on the questions to test their knowledge in the subject, it was observed that 146 students (92%) believe that prior consent is a must for eye donation. 52 students (33%) think that a live person can donate his/ her eyes. Regarding the contraindications for eye donation, only 90 (56%) have given the correct answer of HIV. Only 61 students (38%) know that eyes are to be removed within 6 hours of death. 50 students (31%) know that these can be used to treat only corneal blindness. 70 students (44%) are aware that the part of the eye that is transplanted is the cornea.

Question	Number	Percentage
1) Is prior consent required for eye donation?		
Yes	148	92%
No	12	8%
2) Can a live person donate his/ her eyes?		
Yes	52	33%
No	108	67%
3) Who cannot donate their eyes?		
Diabetic patients	25	16%
HIV patients	90	56%
Those who have undergone cataract surgery	36	24%
Those wearing glasses	7	4%
4) Ideal time after death for eye removal		
0-6 hours	61	38%
6-24 hours	45	28%
Possible to remove even after 24 hours	19	12%

Do not know	35	22%
5) Diseases that can be corrected through eye donation		
All eye diseases	81	51%
Diabetic retinopathy	17	11%
Corneal blindness	50	31%
Glaucoma	6	3.7
6) Which part of the eye is transplanted?		
Lens	49	31%
Cornea	70	44%
Entire eye	15	9%
Do not know	26	16%
<b>Table 4: Knowledge regarding eye donation</b>		

## DISCUSSION

In this study, awareness of eye donation among nursing students was 99.3%, which is similar to studies conducted by Gupta et al<sup>[6]</sup> among nursing students in Bangalore, which showed that 96.8% knew about eye donation. A study by Lal et al<sup>[8]</sup> in Goa among medical and nursing students found that 97.9% were aware of eye donation. A study conducted by Krishnaiah et al among the general population in South India found that 73.8% have heard about eye donation.

The high level of awareness of eye donation may be attributed to the influence of the media. Multiple studies have shown that the media is the major source of information. In our study, 60% came to know about eye donation through mass media.

Regarding willingness for eye donation, only 31% were willing to donate their eyes. A study by Lal et al showed that 42.6% were willing to donate their eyes, study by Shadakshari et al reported that 94% showed willingness for eye donation. 17% of students who were not willing cited personal reasons as the major cause for their unwillingness. Some gave religious concerns as the reason, and some felt that it would change the normal appearance. In the study by Lal et al, only 20.6% were willing to donate the eyes of their close relative, but in our study, it was 53%.

In the questions testing the knowledge in the subject, many students were not able to give the correct answers. 92% wrongly assumed that a prior consent is a must for eye donation. 33% of students even thought that a living person can donate his or her eyes. Only 38% knew that eyes are to be removed within 6 hours of death. Similar studies by Gupta et al showed that only 32.8% and Shadakshari et al<sup>[7]</sup> showed that only 28% knew about the ideal time after death for eye donation. But 56% knew that HIV is a contraindication for taking the eyeball. 51% wrongly believed that it can treat all eye diseases, and only 31% answered the correct option of corneal blindness. 74.4% in the study by Gupta et al<sup>[6]</sup> and 70% in the study by Lal et al knew that the cornea is the part of the eye that is transplanted. Only 8% in the study by Shadakshari knew this. In the current study, 44% knew that the cornea is the part of the eye that is transplanted.

## CONCLUSION

The findings of this study indicate that although most participants were aware of the concept of eye donation, their understanding of the subject remained limited. A substantial number had not made a definitive decision regarding eye donation, with reluctance primarily stemming from personal beliefs, religious considerations, and apprehensions about the potential impact on physical appearance.

Despite these concerns, a significant proportion expressed willingness to support awareness initiatives.

## RECOMMENDATIONS

As future healthcare providers, nursing students occupy a critical position in influencing public attitudes towards eye donation. Therefore, integrating comprehensive education on eye donation into

nursing curricula is essential to equip students with the knowledge and confidence necessary to advocate effectively for this important cause in their professional practice.

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