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Opthalmology

KNOWLEDGE, ATTITUDE & PRACTICE REGARDING EYE DONATION AMONG MEDICAL, NURSING AND ALLIED HEALTH SCIENCES STUDENTS

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ABSTRACT **Purpose:** Corneal diseases constitute a significant cause of visual impairment. There is considerable backlog for corneal transplantation due to lack of awareness. Aim of this study was to assess the knowledge, attitude, and practice regarding eye donation among Medical, Nursing and Allied health sciences students of a medical college in Kerala. **Methods:** A cross-sectional descriptive study was conducted among all first year Medical, Nursing and Allied health sciences students of a medical college in Kerala. A standard predesigned questionnaire was given after obtaining informed consent, to assess their knowledge, attitude and practice regarding eye donation. The data was analysed using statistical package SPSS version 21.0 IBM corp. **Results:** Out of the 285 first year students , 268 responded (94.03%) and majority were females (73.5%). Participants were well aware of eye donation (98.9%). Media was the major source of information for their knowledge (79.5%). Although 94.3% of the students considered eye donation as a service to mankind, only 69.8% were willing to pledge their eyes. Objection by family members (58.6%) was the major reason for not pledging their eyes. 92.1 % were willing to give awareness regarding eye donation to others. **Conclusion:** Awareness about eye donation was high and knowledge was fair. However, the attitude and practice showed mixed responses. Thus strategies and programmes have to be devised to increase the knowledge , attitude and practice regarding eye donation among students in medical colleges so that they can act as good motivators for the general public .

KEYWORDS :

INTRODUCTION

Corneal diseases constitute a significant cause of visual impairment. There is considerable backlog for corneal transplantation due to lack of awareness. As per WHO data globally, at least 2.2 billion people have visual impairment or blindness of which the majority of people with visual impairment are over the age of 50 years(1) Corneal blindness is the 4th cause of blindness globally (5.1%), after cataract, glaucoma and age-related macular degeneration (AMD). Ocular trauma and corneal ulcerations are significant causes of corneal blindness. New cases of unilateral blindness every year are estimated to be 1.5 to 2.0 million, but they are often underreported.

In India according to the National Blindness and Visual Impairment Survey 2019, cataract is the leading cause of blindness in people above 50 years. Currently, there are around 1.2 million corneal blind persons in India, to which 25,000–30,000 are added every year. It is found that blindness is more prevalent in rural population (2.14%) compared to urban (1.8%)(2).

A major treatment option for restoring sight in those with corneal blindness is corneal transplantation which can only be accomplished through eye donation. The donor eye collection is around 22,000 eyes every year presently in India which is insignificant with respect to the requirement(3).

AIM OF STUDY

To assess knowledge, attitude and practice regarding eye donation among medical, nursing and Allied health sciences (AHS) students in a medical college in Kerala.

MATERIALS AND METHODS

A cross-sectional descriptive study was conducted among all first year Medical, Nursing and Allied health sciences students of a medical college in Kerala during April -May 2020. The aim and methods of the study were explained to them and informed consent was obtained from the participants. DMLT(Diploma in Medical Laboratory Technology) , DOTAT(Diploma in Operation Theatre and Anaesthesia Technology) , DRT(Diploma in Radiological technology) ,DDT(Diploma in Dialysis Technology) streams were included in AHS (Allied health sciences) . All students other than first year students (First and second semester) and those who were not aware of eye donation were excluded from the study. A standard predesigned and closed-ended structured questionnaire was prepared in English and self-administered to all these students.

268 out of 285 first year students participated in the study. Responses to the questionnaire were evaluated to understand their knowledge and attitude towards eye donation and willingness to pledge eye. Three students who were not aware about eye donation were excluded from the study. Total 265 students were included in the study. Out of 22 questions, knowledge on eye donation was assessed by 15 questions. The knowledge questions were divided to three categories depending on the difficulty level. Each category consisted of five questions. Correct answers for category 1 were given 1 point, category 2 were given 2 points, category 3 were given 3 points. Total points were 30. A knowledge score of poor, fair and good was calculated depending on total points obtained. During analysis, neutral responses like “undecided” or “don't know” were taken as negative responses. Attitude and practice regarding eye donation was assessed by 5 questions.

Data were analysed using the statistical package SPSS (Version 21.0. IBM Corp). Frequency and percentages were used for all categorical variables. Comparative statistical tests for significant intergroup differences were performed with the help of Chi-square test.

RESULTS

Out of 285 first year students in the college, 268 students participated in the study (Response rate 94.03%). Response rate differed among the three groups. 99.3 % medical students, 92.4 % nursing students and 85.19 % AHS students responded. 3 students (2 medical,1 AHS) who were not aware about eye donation were excluded from the study. Awareness about eye donation was 98.88%. Out of 265 students who were aware about eye donation, 73.9% were females and 26.1 % males. Mean age was 19.42 years. (Table 1)

Table 1 Demography variables

DATA	Medical (n=147)	Nursing (n= 73)	AHS (n= 45)	TOTAL (n=265)
Gender Female Male	 93 (63.2%) 54(36.8%)	 64(87.6%) 9(12.4%)	 38(84,4%) 7(15,6%)	 195(73.9%) 70(26.1%)
Average age(years) in years	19.67	18.89	19.44	19.42

Among those who were aware about eye donation , mass media was the foremost source of information regarding eye donation in 79.5%, followed by friends or relatives in 49.4%, hospital in 46.8% , organ donation campaigns in 38.8%, and doctors in 27% .

Knowledge questions were divided to three categories depending on the difficulty level, category 1 (Basic questions), category 2 and 3 (Advanced questions)

Table 2 Knowledge Questions (category 1 & 2)

Response	Medical (n 147)	Nursing (n73) (n=73)	AHS (n 45) (n=45)	Total (n 265) (n=265)	p Value
Basic Questions (Category 1) Correct Response 1 point, Incorrect Response 0 point					
CAT 1 A) Whether eyes can be donated only after death?					
YES	96 (65.3%)	40 (54.8%)	29 (64.4%)	165 (62.3%)	.300667
NO	51 (34.7%)	33 (45.2%)	16 (35.5%)	100 (37.7%)	
CAT 1 B)Whom do you approach for eye donation ?					
Ophthalmologist	43 (29.2%)	33 (45.2%)	19 (42.2%)	95 (35.8%)	.116114
Hospital	49 (33.3%)	17 (23.2%)	8 (17.8%)	74 (27.9%)	
Eye bank	48 (32.6%)	22 (30.1%)	18 (40%)	88 (33.2%)	
Any Doctor	7 (4.8%)	1 (1.4%)	0	8 (3%)	
CAT 1 C) Whether prior consent is required for eye donation?					
Yes	143 (97.2%)	62 (84.9%)	32 (71.1%)	237 (89.4%)	< 0.00001
No	4 (27.2%)	11 (15%)	13 (28.8%)	28 (10.6%)	
CAT 1 D) Can person with spectacles donate eyes?					
Yes	122 (83%)	44 (60.27)	20 (44.4%)	186 (70.2%)	< 0.00001
No	25 (17%)	29 (39.7%)	25 (55.6%)	79 (29.8%)	
CAT 1 E) Who should remove eye from donor?					
Ophthalmologist	122 (82.9%)	67 (91.8%)	42 (93.3%)	231 (87.25%)	.09788
Any Doctor	4 (2.7%)	3 (4.1%)	1 (2.2%)	8 (3%)	
Don't know	21 (14.3%)	3 (4.1%)	2 (4.4%)	26 (9.8%)	
Advanced Questions (Category 2) Correct Response 2 points, Incorrect Response 0 point					
CAT 2 A) Ideal time to retrieve eyes after death ?					
Within 6 Hours after death	81 (55.1%)	42 (57.5%)	28 (62.2%)	151 (57%)	.226449
Within 12 Hours after death	9 (6.12%)	10 (13.7%)	1 (2.2%)	20 (7.5%)	
Within 24 Hours after death	10 (6.8%)	5 (6.8%)	2 (4.4%)	17 (6.4%)	
Don't know	47 (32%)	16 (21.9%)	14 (31.1%)	77 (29.1%)	
CAT 2 B) Which part is removed from donor?					
Whole Eye	11 (7.48%)	9 (12.32%)	2 (4.4%)	22 (8.3%)	.031691
Lens	10 (6.8%)	13 (17.8%)	5 (11.1%)	28 (10.6%)	
Cornea	112 (76.2%)	45 (61.6%)	29 (64.4%)	186 (70.2%)	
Don't know	14 (9.52%)	6 (8.22%)	9 (20%)	29 (10.9%)	
CAT 2 C) Can person with cataract/ glaucoma donate eyes ?					
Yes	34 (23.1%)	11 (15.06%)	7 (15.55%)	52 (19.6%)	.275556
No	113 (76.9%)	62 (84.9%)	38 (84.44%)	213 (80.4%)	
CAT 2 D) Can person with medical illness like hypertension, Diabetes donate eyes ?					
Yes	50 (34%)	34 (46.6%)	12 (26.6%)	96 (36.2%)	.064707
No	97 (66%)	39 (53.4%)	33 (73.3%)	169 (63.8%)	
CAT 2 E) Which part is transplanted in the recipient ?					
Whole Eye	2 (1.36%)	1 (1.36%)	1 (2.2%)	4 (1.5%)	.068795
Lens	9 (6.12%)	10 (13.7%)	4 (8.8%)	23 (8.7%)	
Cornea	121 (82.3%)	48 (65.8%)	29 (64.4%)	198 (74.7%)	
Don't know	15 (10.2%)	14 (19.2%)	11 (24.4%)	40 (15.7%)	

On analysing the response to category 1 questions (Table 2), only 62.3% participants knew that eyes are donated after death. There was no statistically significant difference between groups. 35.8% responded that they would approach Ophthalmologist for eye donation. 89.4% responded that prior consent is required for eye donation which was statistically significant ($p<.05$). 70.2% were aware that persons with spectacles can donate eyes (83% of medical,60.27%of nursing and 44.4% of AHS students).Significant statistical difference was present between groups (p value <0.00001). 87.25% of the participants were aware that ophthalmologist should remove eye from donor.

On analysing category 2 questions (Table2), 57% were aware that the ideal time for donation was within 6 hours of death and 29% did not know the ideal time. The knowledge that whole eye or cornea is removed from the donor was known to 78.49% (Fig 1). 80.4% of the students were having the wrong assumption that a person with cataract or glaucoma cannot donate eyes and 63.8% thought that a person with hypertension or diabetes cannot donate eyes. Majority of the participants were aware that cornea is the part which is transplanted in the recipient (74.7%)

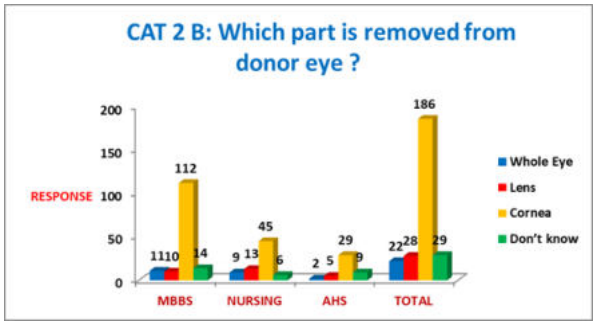

Figure 1

TABLE 3: Advanced Questions (CATEGORY 3) Correct Response 3 points, Incorrect Response 0 points)

Response	MBBS	Nursing	AHS	Total	p value
CAT 3 A) Is there any age limit for donating eyes ?					
Yes	21 (14.3%)	12 (16.4%)	12 (26.7%)	45 (17%)	.145399
No	54 (36.7%)	29 (39.7%)	20 (44.4%)	108 (38.9%)	
Don't know	72 (49%)	32 (43.8%)	13 (28.9%)	117 (44.2%)	
CAT 3 B) Whether eye donation causes disfigurement of face of donor?					
Yes	8 (5.4%)	6 (8.2%)	6 (13.3%)	20 (7.5%)	.208052
No	139 (94.6%)	67 (91.8%)	39 (86.7%)	245 (92.5 %)	
CAT 3C) Whether eye can be retrieved at donor's house itself					
Yes	38 (25.8%)	8 (10.9%)	7 (15.6%)	53 (20%)	.024361
No	109 (74.2%)	65 (89%)	38 (84.4%)	212 (80%)	
CAT 3 D) Whether family will be charged for donating eyes ?					
Yes	36 (24.5%)	25 (34.3%)	8 (17.7%)	69 (26%)	.114667

No	111 (75.5%)	48 (65.7%)	37 (82.2%)	196 (74%)	
CAT 3 E) Is there any eye bank in your state ?					
Yes	124 (84.3%)	61 (83.5%)	39 (86.7%)	224 (84.5%)	.89901
No	23 (15.6%)	12 (16.4%)	6 (13.3%)	41 (15.5%)	

On analysing category 3 questions (Table 3), the fact that there is an age limit for donation of eyes was known only to 17 % whereas 44.2% did not know. 92.5 % of the participants were aware that eye donation will not cause disfigurement of face of donor. 80% of the participants were aware that eyes can be retrieved at donor's house itself. (Fig 2). 74% were aware that family will not be charged for donating eyes and 84.5% of the participants knew about the existence of eye bank in Kerala state.

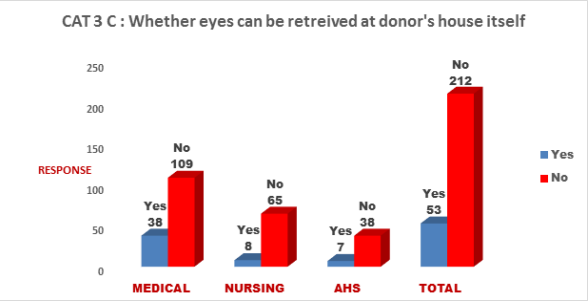

Figure 2

Table 4 Knowledge Score (total 30)

Range	Medical	Nursing	AHS	Total	P value
Less Than 5 (Poor)	0	0	0	0	2.2847
5-20 (Fair)	112 (76.19%)	62(84.9%)	36(80%)	210 (79.2%)	
>20 (Good)	35(23.8%)	11(15.06%)	9(6.6%)	55(20.75%)	
AVERAGE SCORE	16.54	15.6	15.68	16.32	

As per the knowledge score range obtained, participants were categorised as poor (score <5), fair (score 5-20) and good (score >20). Total knowledge score was 30 .No student's performance was poor. Overall 79.2% had fair score, but only 20.75% had good score. Overall average score was 16.32 (Table 4).

Table 5 Attitude And Practice Towards Eye Donation

Response	Medical	Nursing	AHS	Total
1) Are you willing to donate your eyes ?				
Yes	109 (74.1%)	46 (63%)	30 (66.7%)	185 (69.8%)
No	38 (25.9%)	27 (37%)	15 (33.3%)	80 (30.2%)
2) If not willing, reason for not pledging eyes?				
Lack of awareness	19 (50%)	10 (37%)	7 (46.7%)	36 (45%)
Objection by family members	21 (55%)	16 (59.2%)	10 (66.7%)	47 (58.6%)
Unacceptable idea of separating eye from body	10 (26.3%)	7 (25.9%)	4 (26.7%)	21 (26.2%)
Religious reasons	9 (23.7%)	6 (22.2%)	3 (20%)	18 (22.5%)
Belief in myths like person will be born blind in the next life	2 (5.2%)	1 (3.7%)	1 (6.7%)	4 (5%)
3) Do you think eye donation will be a service to mankind ?				
Yes	144 (97.9%)	68 (93.2%)	38 (8.4%)	250 (94.3%)
No	3 (2.1%)	5 (6.8%)	7 (15.6%)	15 (5.7%)
4) Are you willing to motivate close relatives for eye donation?				
Yes	107 (72.8%)	46 (63%)	31 (68.9%)	184 (69.4%)
No	3 (2%)	4 (5.4%)	3 (6.7%)	10 (3.8%)
Not sure	37 (25.1%)	23 (31.5%)	11 (24.4%)	71 (26.8%)
5) Are you willing to give awareness regarding eye donation to others?				
Yes	140 (95.2 %)	67 (91.8%)	37 (82.2%)	244 (92.1%)
No	7 (4.76%)	6 (8.2%)	8 (17.8%)	21 (7.9%)

While analysing attitude and practice towards eye donation, only 69.8% were willing to donate their eyes. 30.2% were not willing to donate their eyes (Fig 3). Main reason for not pledging their eyes in all three groups was objection by family members in 58.6%, followed by lack of awareness in 45% (Table 5).

Figure 3

Only 94.3% students thought eye donation as a service to mankind. 69.4% of the students were willing to motivate close relatives for eye donation and 92.1% were willing to give awareness regarding eye donation to others.

DISCUSSION

According to eye bank association of Kerala statistics, the total eye transplants in 2019 was 1249 which is steady over the last few years without significant increase(4).Well informed Medical, Nursing and AHS students are expected to influence eye donation rates.

Our study showed that awareness about eye donation was high among the students which was 98.88% which was comparable to other studies conducted in similar population by Barsha et al (97.9%), Anita et al (96.8%) and Sanjeev kumar et al (98%)(5–7). Mass media was quoted as the most common source of information in 79.5% of the participants which was also comparable to other studies conducted in various parts of India and abroad(5,8–11). This highlights the importance of conducting eye donation campaigns through various mass media which can influence the decision to donate eyes. In the present era, the various social networking platforms can also be considered for these campaigns.

The fact that the eyes can be donated only after death was known only to 62.3% of participants which was significantly low compared to other similar studies by Hosamani et al(9) and Anita et al(6) which was 82.4% and 97% respectively. Most of the participants responded that they would approach ophthalmologist, eye banks or hospitals for eye donation which showed a good knowledge in this aspect. The fact that 89.4 % were aware that prior consent was required for eye donation was significantly higher than most other studies conducted in different parts of India(7,8,12,13) . An important aspect which decides the viability of the retrieved tissue is the time interval between death and retrieval. 6 hours was the maximum time was known to only 57 % of the students. Various studies show wide variation in this aspect ranging from 39% to 86%(5,7,8,13,14). This highlights the importance of creating more awareness regarding this.

This study also brought out certain misconceptions regarding the donor. Majority believed that persons with cataract, glaucoma, diabetes and hypertension cannot donate eyes. This was higher than the studies by Hosamani et al and Barsha et al(5,9). The fact that 84.5% were aware of the existence of eye banks in Kerala shows better knowledge in this regard compared to another study by Barsha et al(5). Overall knowledge was fair in our study. The knowledge score range obtained by the participants did not show any statistically significant difference between the groups though it was slightly higher in the MBBS group. This was similar to another study by chowdhury et al (12). This might probably be due to the fact that medical students have

a more meritorious background than the nursing students. None had poor score, which gives hope that with little more awareness and education their score can be improved.

Willingness for eye donation was expressed by 69.8% which showed wide variations in other studies by Barsha et al, Magdum et al and Nekar et al which were 42.6%,77% and 78.1% respectively(5,15,16). We should be more concerned that 30.2 % were not willing mainly because of objection by family members and lack of awareness. This was proved by most of the previous studies also (5,6,11–14). In a country like India where family members play a crucial role in all such decisions, creating awareness in the general public will help to procure more eyes.

CONCLUSION

In India where corneal blindness is one of the major causes for blindness, there is a huge gap between the demand and supply of good donor corneas. Though awareness about eye donation was high in our study, knowledge was only fair. The attitude and practice showed mixed responses. This shows that strategies have to be devised not only to increase the awareness and knowledge among students, but also to improve the attitude and practice regarding eye donation. Targeting medical, nursing and paramedical students for eye donation awareness campaign from medical colleges will be an important step in this regard so that they can act as effective counsellors for the general public. Thus we can bridge the gap between eye requirement and eye donation.

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