

# **Original Research Article**

# EYE DONATION AWARENESS AMONGST STUDENTS OF A MEDICAL COLLEGE AND ALLIED UNIVERSITY IN URBAN CENTRAL INDIA

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#### ABSTRACT

**Background:** To study and make a comparative analysis on knowledge, attitude, and practice pattern regarding eye donation amongst MBBS, BDS, Homeopathy and Nursing students in a tertiary care medical college hospital in Central India.

**Materials and Methods:** It is a population based cross sectional study involving 369 MBBS & Paramedical students. A structured questionnaire including 21 questions divided in three sections assessing knowledge, attitude and practice pattern is noted. Chi square test is done for dependent and independent variables. Test performed at 95% confidence interval with p value <0.05 considered statistically significant.

**Results:** Mean knowledge score was  $3.875\pm2.185$ . MBBS students had a mean score of 5.150 (SD = 1.400, range 1-9) indicating a higher level of knowledge than other medical courses. Knowledge score among nursing students was the least 2.180 (SD = 2.222, range 0-7). Willingness to donate eyes also showed a significant association with knowledge ( $\chi$ 2=371.471, p<0.001).

**Conclusion:** MBBS students had better knowledge than paramedic students. Higher knowledge is linked to positive attitude towards eye donation. The practice pattern regarding pledging is poor in all the students. Thus, structured eye donation awareness programmes targeting medical and paramedical students are recommended.

**Keywords:** Eye Donation; Medical students; Corneal Blindness; Corneal Transplant; Awareness.

#### INTRODUCTION

Corneal Blindness is a leading cause of blindness in the world and in India. Of the burden of global blindness, blindness due to corneal pathologies is about 5%, only less than cataract and glaucoma. [1]. Although major chunk of corneal blindness can be prevented with early diagnosis and proper treatment, once the corneal blindness has set in Corneal transplant remains the main treatment option. [2]

Corneal donation is of utmost importance in India as India has the largest number of people with corneal blindness across the globe.<sup>[3]</sup> Despite of continuous efforts from Govt of India there remains a huge gap between the demand and supply of corneal tissue. Estimated procurement of donor cornea is around

49,000 per year and estimated donor tissue required for transplant is around 2,77,000 per year. [4,5,6] Different studies cite factors for this discrepancy which are varied in nature, ranging from lack of awareness, social and religious beliefs or simply lack of motivation.

Our study is a comparative study between students of MBBS, BDS, Homeopathy, Nursing to assess their attitude and awareness towards eye donation. This group is chosen as these students will serve as the most important motivating factor for the entire population. Lack of awareness and prejudices regarding eye donation in medical and allied fraternity will reflect in the society and thus there is need to address it urgently. There is scarcity of comparative studies on eye donation awareness

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among medical and allied fields in Central India. The responses are expected to guide us for future health campaigns.

#### MATERIAL AND METHODS

This is a population-based cross-sectional study, involving MBBS, BDS, Homeopathy and Nursing students affiliated to university in central India. The questionnaire includes technical, social and legal aspects of eye donation. The total number of questions is 21. They are divided into three parts, questions for assessing knowledge, questions for assessing attitude and lastly questions for assessing practice pattern towards Eye donation. Knowledge scores were calculated for technical questions. A total of 369 participants were included with approximate equal proportions from each group. The questionnaires were distributed in hard copy in their classrooms. Informed written consent was taken. 20 minutes were allotted to complete the questionnaire.

Categorical data is expressed in percentages and proportions. A Chi-square test is used to look for significant associations between independent variables. Dependant variables like knowledge and attitude assessed by Chi – square test. All tests are performed at 95% C.I. and p <0.05 is considered statistically significant.

## RESULTS

A total of 369 participants were included in the study out of which 164 were males and 205 were females. Mean age of the study participants 20.5  $\pm 1.8$  years (Range 18-26 years).

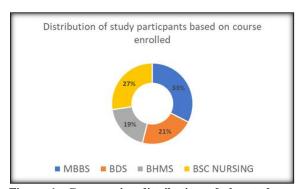


Figure 1: Course wise distribution of the students based on course enrolled

The study revealed significant differences in knowledge about eye donation across medical courses. MBBS students consistently showed the highest awareness and correct knowledge, especially regarding consent, the optimal time for tissue retrieval, and eye tissue preservation. BDS students also demonstrated relatively high awareness, but less than MBBS students. BHMS and Nursing students exhibited the least knowledge, with Nursing students being the most unaware. Teachers

were the primary information source for MBBS students, while media was more influential for BDS, BHMS, and Nursing students. Significant gaps were noted in understanding eye donation procedures and regulations, particularly among Nursing and BHMS students. [Table 2]

We also calculated knowledge score wherein participants were asked 12 technical questions, with each correct answer scoring 1 point and incorrect answers scoring 0, resulting in an overall knowledge score of 3.875±2.185. The analysis of scores by gender showed that males had a mean score of 3.988 with a standard deviation of 2.060, and scores ranging from 0 to 8. Females had a slightly lower mean score of 3.784, a higher standard deviation of 2.281, and scores ranging from 0 to 9. These results suggest that while the average knowledge about eye donation is slightly higher in males, the variability in knowledge is greater among females.

MBBS participants had the highest mean score of 5.150 (SD = 1.400, range 1-9), indicating a relatively high and consistent level of knowledge. BDS participants followed with a mean score of 4.241 (SD = 1.504, range 0-8), showing moderate knowledge with some variability. BHMS participants had a mean score of 3.696 (SD = 2.296, range 0-7), indicating more varied and generally lower knowledge. Nursing participants had the lowest mean score of 2.180 (SD = 2.222, range 0-7), suggesting the least knowledge and highest variability among the groups.

The study examining knowledge of eye donation revealed significant associations between knowledge levels and specific variables. Gender did not show a significant association with knowledge  $(\chi 2=2.677, p=0.262)$ , with both males and females exhibiting similar distributions of no, poor, and good knowledge. In contrast, the course enrolled was significantly associated with knowledge levels  $(\chi 2=133.758, p<0.001)$ , with MBBS students displaying the highest levels of good knowledge, followed by BDS, BHMS, and Nursing students, who had the least. Willingness to donate eyes also showed a significant association with knowledge ( $\chi$ 2=371.471, p<0.001); all participants willing to donate eyes had some knowledge, while those unsure had no knowledge. Other background factors like religion, parents' education status, and parents occupation were not found to be significantly associated with knowledge levels. [Table 3]

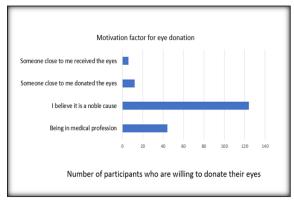


Figure 2: Motivation factor for eye donation

The majority of participants indicated that their primary motivation to donate eyes was because they viewed it as a noble cause. The second most common reason was their affiliation with the medical profession, which instilled a sense of responsibility and awareness. This was followed by personal experiences, such as having a family member who had donated eyes, which further inspired them to consider eye donation. [Figure 2]

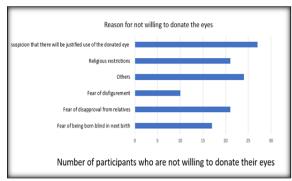


Figure 3: Reason for not willing to donate the eyes

Reasons for not being willing to donate eyes are depicted in Figure 3. The majority of participants expressed suspicion about whether their donated

eyes would be used for a justified cause. Other reasons included religious beliefs, fear of disfigurement, disapproval from relatives, and fears related to being born blind in the next birth.

Those who expressed willingness for eye donation were asked whether they pledged for ye donation and among those (n=182) only one participant from the MBBS group had pledged for eye donation, while the majority across all groups, totalling 181 participants, had not pledged. This highlights a significant disparity in pledge rates among medical students across various disciplines.

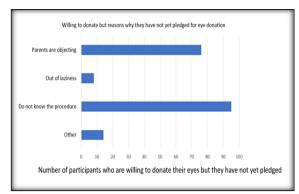


Figure 4: Reasons for participants who are willing to donate their eyes but they have not yet pledged

In Figure 4, the reasons cited by participants who are willing to donate their eyes but have not yet pledged are detailed. The most common reason reported was lack of knowledge about the procedure or process involved in pledging. Another frequent barrier was objection from parents or family members. Less commonly mentioned reasons included procrastination due to laziness and various other factors contributing to hesitation or delay in making the pledge for eye donation.

Table 1	l: Sociod	lemograp	hic pro	file of t	he stud	y partici	ipants

Table .	1. Bucioucinogi	rapnic prome of t	ne study partie	трань			
Sr No.			MBBS(%)	BDS(%)	BHMS(%)	BSC NURSING(%)	TOTAL(%)
1	A	>20	11 (8.9)	07(5.6)	07(5.6)	99(79.9)	124(100)
1	Age	≤20	109(44.4)	72(29.3)	62(25.3)	02(0.8)	245
2	C1	Male	60(36.5)	37(22.5)	49(29.8)	18(10.9)	164
2	Gender	Female	60(29.2)	42(20.4)	20(9.75)	83(40.4)	205
		Hinduism	112(33.1)	70(20.7)	61(18.04)	95(28.1)	338
3	D-1:-:	Islam	05(21.7)	06(26.08)	07(30.4)	05(21.7)	23
	Religion	Other	03(37.5)	03(37.5)	01(12.5)	01(12.5)	08
		Illiterate	03(75)	00	01(25)	00	04
		Primary school	06(25)	00	04(16.6)	14(58.3)	24
4	Fathers'	High school	24(24.2)	16(16.1)	15(15.15)	44(44.4)	99
	education	Graduate and above	88(36.2)	63(25.9)	49(20.16)	43(17.16)	243
		Illiterate	03(75)	00	01(25)	00	04
		Primary school	21(43.75)	05(10.4)	04(8.33)	18(37.5)	48
5	Mothers'	High school	28(27.7)	09(8.9)	26(25.7)	38(37.6)	101
	education	Graduate and above	68(31.4)	65(30.09)	38(17.5)	45(20.08)	216
		Unskilled	02(100)	00	00	00	02
5	Fathers'	Skilled	07(35)	05(25)	03(15)	05(25)	20
	Occupation	Farmer	25(33.3)	09(12)	09(12)	32(42.6)	75

		Business	51(37.2)	14(10.2)	28(20.4)	44(32.11)	137
		Professional	35(25.9)	51(37.7)	29(21.4)	20(14.8)	135
	6 Mothers' Occupation	Unskilled	01((50)	00	01(50)	00	02
		Skilled	108(36.7)	74(25.17)	57(19.3)	55(18.7)	294
		Farmer	02(11.1)	00	00	16(88.8)	18
0		Business	01(5.55)	01(5.55)	02(11.1)	14(77.7)	18
		Professional	08(21.6)	04(10.8)	09(24.3)	16(43.2)	37
		Homemaker					

Table 2: Response to knowledge-based questions

Question I. Have you heard about eye donation?*         Yes         118 (38.8) (25.6) (25.0) (25.0)         54(17.8) (25.0) (25.0)         54(17.8) (25.0) (25.0)         304(100) (27.9)         72−94.598° p <0.0011°*	Table 2: Respons	to knowledge	MBBS(%)	BDS(%)	BHMS(%)	NURSING(%)	Total(%)	SIGNIFICANCE
Sectionation   Section		Yes	118 (38.8)		54(17.8)	54(17.8)	304(100)	
Teachers   Federal   Realitives and   Relatives and   Principles   Princ		No	02(3.07)		15(23.07)	47(72.3)	65	p <0.001*
Question 3, According to you can eye taken from a living human being if he'she is willing to do so?   Yes   84(35)   67(27.9)   47(19.5)   48(75)   54   48(75)   64   7 \						` /		
first learn about eye donation?  Question 3.  Awareness 20(33.3) 07(11.6) 07(11.6) 26(44.3) 60  Question 3.  According to you according to you according to you according to you and according to you and according to you and according to you acco		Relatives and				` '	29	v2=76.2#
eye donation?         Awareness programs         20(33.3)         07(11.6)         07(11.6)         26(44.3)         60           Question 3. According to you can eye be taken from al living human being if hother is willing to do so?         No         36(55.3)         11(16.9)         07(10.7)         11(16.9)         65           Question 4. What is the optimal time after death effore which eye tissue can be retrieved from the donor?         20 on't Know         81(44.5)         49(26.9)         30(16.48)         22(12.08)         182           Question 4. What is the optimal time after death effore which eye tissue can be retrieved from the donor?         50(40)         07(35)         30(16.48)         22(12.08)         182           Question 5. Is consent in written form mandatory prior to death for retrieval of eyes from the donor?         Yes         114(44.18)         70(27.13)         37(14.3)         37(14.3)         25(14.0)         44           Question 6. If the near relatives are written consent is available from the donor?         Yes         53(32.9)         56(34.7)         25(15.5)         27(16.77)         161           Question 7. If no written consent is available from the deceased honor but the near relatives are written consent is available from the donor?         Yes         65(38.6)         51(30.3)         24(14.2)         28(16.6)         168           Question 8. Is monetary compensation (money) given to the fam	•		34(28.8)	37(31.3)	21(17.7)	26(22.03)	118	
Duestion 3, According to you according			` ′					p (diddddd)
According to you can eye be taken from a living human being if he/she is willing to do so?  Question 4. What is the optimal time after death before which eye tissue can be retrieved from the donor?  Question 5. Is consent in written from mandatory prior to death for pertieved from whe donor?  Question 6. If the retrieval from we of the doceased donor but the near relatives are willing to donard.  Question 7. If no.  Don't Know  Don't Know  O0 01(1.56) 15(23.4) 48(75) 64  Don't Know  O0 01(1.56) 15(23.4) 48(75) 64  Don't Know  O0 01(1.56) 15(23.4) 48(75) 64  Don't Know  Don't Know  O0 01(1.56) 15(23.4) 48(75) 64  Don't Know		programs	` ′	` ′	` ´	` ′		
Can eye be taken from a living human being if the she is willing to do so?   Don't Know   O0   1(1.56)   15(23.4)   48(75)   64		Yes	84(35)	67(27.9)		42(17.5)	240	
Don't Know   Don		No	36(55.3)	11(16.9)	07(10.7)	11(16.9)	65	v2-116 802#
is the optimal time after death before which eye tissue can be retrieved from the donor?  Question 5. Is consent in written form mandatory prior to death for retrieved from the donor entired the consent prior to death sa submitted the consent prior to death, can you retrieve the eyes from the donor?  Question 7. If no written consent is available from the deceased donor but the near relatives are willing to donate the eyes of the deceased, can you to the the eyes of the deceased, can you to the the eyes of the deceased, can you currieve the eyes?  Question 8. Is monetary compensation (money) given to form the donor in return for eye donation?  Question 9. Westion 9. Use of the form the donor in return for eye donation?  Question 9. Use of the form the donor in return for eye donation?  Question 9. Which itssue of eye is transplanted from the donor in eye donation?  Retina 03(60) 01(20) 01(20) 00 00 05	human being if he/she is willing	Don't Know	00	1(1.56)	15(23.4)	48(75)	64	
time after death before which eyes from the donor?  Question 5. Is one of the donor?  Question 6. If the near relatives of far the donor refuse for object the donor?  Question 6. If the near relatives of the donor full the donor refuse for donation even if the deceased has submitted the consent pin to death, can you retrieve the eyes from the donor?  Question 8. Is monetary compensation (monety) given to death (eves?)  Question 9. If no written eaves of the family of the donor in return for eye donation?  Question 9. The own of the family of the donor in return for eye donation?  Question 9. The own of the family of the donor in even in form the donor in eye donation?  Question 9. Retina 03(60) 01(20) 01(20) 00 0 5	Question 4. What	<6 hours	81(44.5)	49(26.9)	30(16.48)		182	
before which eye tissue can be retrieved from the donor?  Question 5. Is consent in written from mandatory prior to death for retrieval of eyes from the donor retrieval of eyes from the donor retrieval of eyes from the donor?  Question 6. If the near relatives of the donor refuse for donation even if the deceased has submitted the consent prior to death, can you retrieve the eyes from the donor?  Question 7. If no written consent is available from the deceased donor but the near relatives are willing to donate the eyes of the deceased, can you retrieve the eyes?  Question 8. Is monetary compensation (money) given to the family of the donor in return for eye donation?  Question 9. Wes donor trinow 03(4.34) 02(2.89) 15(21.73) 49(71.0) 69  Question 9. Which tissue of eye is transplanted from the donor in eyer donation?  Very more than 100 0 01(1.56) 15(23.4) 48(75) 64  Z=123.274* p <0.001**  Z=123.274* p <0.0	is the optimal	Up to 24 hours	34(33.0)	22(21.3)	16(15.5)	31(30.0)	103	
before which eye tissue can be retrieved from the donor?  Question 5. Is consent in written from mandatory prior to death for retrieval of eyes from the donor?  Question 6. If the consent prior to death, can you retrieve the eyes from the donor?  Question 7. If no written consent is available from the decased donor but the near relatives are willing to donate the eyes of the decased, can you retrieved the eyes?  Question 8. Is monetary compensation (money) given to the family of the donor in return for eye donation?  Question 9.  Question 1.  Lens  10(30.30)  10(30.30)  10(30.30)  10(30.31)  10(30.30)  10(30.31)  10(30.30)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(30.31)  10(3	time after death						20	2-126 271#
No   06(12.7)   08(17.02)   17(36.17)   16(34.0)   47	tissue can be retrieved from the	Don't Know				48(75)	64	
Don't Know   Do	Question 5. Is	Yes	114(44.18)	70(27.13)	37(14.3)	37(14.3)	258	
prior to death for retrieval of eyes from the donor?  Question 6. If the near relatives of the donor retrieve the eyes from the donor?  Question 7. If no written consent is available from the deceased donor but the near relatives are willing to donate the eyes of the deceased, can you retrieve the eyes?  Question 8. Is monetary compensation (money) given to the family of the donor in eye donation?  Question 9. Which tissue of eye is transplanted from the donor in eye donation?  Pon't Know oo 0 01(1.56) 15(23.4) 48(75) 64  Don't Know oo 0 01(1.56) 15(23.4) 10(1.56) 15(23.4) 10(1.56) 15(23.4) 10(1.56) 15(23.4) 10(1.56) 15(23.4) 10(1.56) 15(23.4)	consent in written	No	06(12.7)	08(17.02)	17(36.17)	16(34.0)	47	
Question 6. If the near relatives of the donor refuse for donation even if the deceased has submitted the consent prior to death, can you retrieve the eyes from the donor?         Don't Know         00         01(1.56)         15(23.4)         48(75)         64         \$\chickref{\chickref{2}}\climate{2}=123.274\bmathref{\chickref{2}}\bmathref{\chickref{2}}\climate{2}=123.274\bmathref{\chickref{2}}\bmathref{\chickref{2}}\climate{2}=123.274\bmathref{\chickref{2}}\bmathref{\chickref{2}}\climate{2}=123.274\bmathref{\chickref{2}}\bmathref{\chickref{2}}\climate{2}=123.274\bmathref{\chickref{2}}\bmathref{\chickref{2}}\climate{2}=123.274\bmathref{\chickref{2}}\bmathref{\chickref{2}}\climate{2}=123.274\bmathref{\chickref{2}}\bmathref{\chickref{2}}\climate{2}=123.274\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\climate{2}=10.001\structre{\chickref{2}}\climate{2}=10.001\structre{\chickref{2}}\bmathref{\chickref{2}}\climate{2}=10.001\structre{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}\bmathref{\chickref{2}}	prior to death for retrieval of eyes	Don't Know					64	
No		Yes	53(32.9)	56(34.7)	25(15.5)	27(16.77)	161	
the donor refuse for donation even if the deceased has submitted the consent prior to death, can you retrieve the eyes from the donor? Question 7. If no written consent is available from the deceased donor but the near relatives are willing to donate the eyes of the deceased, can you retrieve the eyes? Question 8. Yes 43(29.6) 45(31.03) 26(17.9) 31(21.3) 145	•							
Question 7. If no written consent is available from the deceased donor but the near relatives are willing to donate the eyes of the deceased, can you retrieve the eyes?         Ves         65(38.6)         51(30.3)         24(14.2)         28(16.6)         168           Question 8. Is monetary compensation (money) given to the family of the donor in return for eye donation?         Yes         43(29.6)         45(31.03)         26(17.9)         31(21.3)         145           Question 9. Which tissue of eye is transplanted from the donor in eye donation?         Complete eye         08(11.9)         28(41.7)         17(25.3)         14(20.89)         67           Question 9. Which tissue of eye is transplanted from the donor in eye donation?         Cornea         99(51.03)         43(22.16)         26(13.40)         26(13.40)         194 $\chi^2 = 155.644^*$ p <0.001*	for donation even if the deceased has submitted the consent prior to death, can you retrieve the eyes	Don't Know	00	01(1.56)	15(23.4)	48(75)	64	χ2=123.274# p <0.001*
Virteous   No   55(40.14)   27(19.70)   30(21.8)   25(18.24)   137		Yes	65(38.6)	51(30.3)	24(14.2)	28(16.6)	168	
available from the deceased donor but the near relatives are willing to donate the eyes of the deceased, can you retrieve the eyes?    Question 8. Is monetary compensation (money) given to the family of the donor in return for eye donation?    Question 9. Which tissue of eye is transplanted from the donor in eye donation?    Available from the deceased donor but the near relatives are willing to donate the eyes?    Don't Know    O0    O1(1.56)    15(23.4)    48(75)    64								1
monetary compensation (money) given to the family of the donor in return for eye donation?    Question 9. Which tissue of eye is transplanted from the donor in eye donation?    Question 9. Which tissue of eye is transplanted from the donor in eye donation?    Question 9. Which tissue of eye is transplanted from the donor in eye donation?    Question 9. Which tissue of eye is transplanted from the donor in eye donation?    Question 9. Which tissue of eye is transplanted from the donor in eye donation?    Question 9. Which tissue of eye is transplanted from the donor in eye donation?    Question 9. Which tissue of eye is transplanted from the donor in eye donation?    Question 9. Which tissue of eye is transplanted from the donor in eye donation?    Question 9. Which tissue of eye is transplanted from the donor in eye donation?    Question 9. Which tissue of eye is transplanted from the donor in eye donation?    Question 9. Which tissue of eye is transplanted from the donor in eye donation?    Question 9. Which tissue of eye is transplanted from the donor in eye donation?    Question 9. Which tissue of eye is transplanted from the donor in eye donation?    Question 9. Which tissue of eye is transplanted from the donor in eye donation?    Question 9. Which tissue of eye is transplanted from the donor in eye donation?    Question 9. Which tissue of eye is transplanted from the donor in eye donation?    Question 9. Which tissue of eye is transplanted from the donor in eye donation?    Question 9. Which tissue of eye is transplanted from the donor in eye donation?    Question 9. Which tissue of eye is transplanted from the donor in eye donation?    Question 9. Which tissue of eye is transplanted from the donor in eye donation?    Question 9. Which tissue of eye is transplanted from the donor in eye donation?    Question 9. Which tissue of eye is transplanted from the donor in eye donation?    Question 9. Question 9.    Question 9. Question 9.    Question 9. Question 9.    Question 9. Question 9.    Question 9. Quest	deceased donor but the near relatives are willing to donate the eyes of the deceased, can you retrieve the eyes?			01(1.56)				
compensation (money) given to the family of the donor in return for eye donation?    No		Yes	43(29.6)	45(31.03)	26(17.9)	31(21.3)	145	
the family of the donor in return for eye donation?    Don't Know   03(4.34)   02(2.89)   15(21.73)   49(71.0)   69	compensation	No	74(47.7)	32(20.6)	28(18.0)	21(13.5)	155	χ2=106.765#
Question 9. Which tissue of eye is transplanted from the donor in eye donation? Question 9. Which tissue of eye is transplanted from the donor in eye donation? Question 9. Lens $10(30.30)$ $05(15.15)$ $08(24.24)$ $10(30.30)$ $33$ $08(24.24)$ $10(30.30)$ $194$ $10(30.30)$ $194$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$ $10(30.30)$	the family of the donor in return for	Don't Know	03(4.34)	02(2.89)	15(21.73)	, , ,		p <0.001**
Which tissue of eye is transplanted from the donor in eye donation? Which tissue of eye is transplanted from the donor in eye donation? Witreous $00$ $01(16.6)$ $02(33.3)$ $03(50.0)$ $06$ $01(20)$ $01(20)$ $00$ $05$		Complete eye	08(11.9)	28(41.7)	17(25.3)	14(20.89)	67	
which issue of eye is transplanted from the donor in eye donation?  Cornea  99(51.03)  43(22.16)  26(13.40)  26(13.40)  194  y2=155.644# p <0.001*  x2=155.644# p <0.001*	•	Lens	10(30.30)	05(15.15)	08(24.24)	10(30.30)	33	1
riom the donor in eye donation? Vitreous 00 01(16.6) 02(33.3) 03(50.0) 06 Retina 03(60) 01(20) 01(20) 00 05	eye is transplanted							χ2=155.644 <sup>#</sup> p <0.001*
Retina 03(60) 01(20) 01(20) 00 05		Vitreous	00	01(16.6)	02(33.3)	03(50.0)	06	1
	eye donation?							1
		Don't know	01(1.56)	02(3.125)	15(23.4)	48(75)	64	1

Complete eye 15/16 6 25/28 9 14/15 5 26/28 9 00	1
Question 10. Complete eye   15(16.6)   35(38.8)   14(15.5)   26(28.8)   90	
Which tissue we remove from the         Comeoscleral button         83(52.2)         32(20.12)         17(10.69)         27(16.98)         159	χ2=168.721#
donor for eye donation?   Either of the above two   22(39.2)   11(19.6)   23(41.07)   00   56	p <0.001*
Don't know 00 01(15.6) 15(23.4) 48(75) 64	
Question 11. For Yes 54(35.5) 39(25.6) 24(15.78) 35(23.02) 152	
eye tissue preservation do we need some medium solution?  No 66(30.41) 40(18.4) 45(20.7) 66(30.4) 217	χ2=5.850 p =0.119
Question 12. If Yes 114(43.34) 69(26.2) 47(17.8) 33(12.5) 263	
donated eyes are No 06(14.28) 09(21.4) 07(16.6) 20(47.6) 42	1
not found suited for eye transplant, can they be taken for research purposes after consent?  Don't Know 00 01(15.6) 15(23.4) 48(75) 64	χ2=130.627 <sup>#</sup> p <0.001*
Question 13. Is Yes 59(33.9) 50(28.73) 27(15.5) 38(21.8) 174	
Refractive error No 61(46.5) 28(21.37) 27(20.6) 15(11.4) 131	γ2=114.085#
(specs) in donor a contraindication for eye donation?    Contraindication for eye donation   Don't Know   Don	p <0.001*
Question 14. Is Yes 79(39.3) 63(31.3) 26(12.9) 33(16.4) 201	
serology test No 40(38.8) 15(14.5) 28(27.18) 20(19.4) 103	
(blood test) for HIV, Hep B in donor done prior to eye transplantation?  (blood test) for HIV, Hep B in donor done prior to eye	χ2=117.487# p <0.001*
Question 15. Is Yes 56(46.6) 21(17.5) 15(12.5) 28(23.3) 120	2-110 244#
there any eye No 64(38.7) 57(30.8) 39(21.0) 25(13.5) 185	χ2=119.244 <sup>#</sup> p <0.001*
bank in your state Don't Know 00 01(15.6) 15(23.4) 48(75.0) 64	p <0.001**

<sup>\*</sup>Statistical significance p<0.05; # Yates's continuity correction applied

Table 3: Association of pertinent variables with knowledge

Table 3. Association of	jei tillelit val	labics with know	icuge			
		No Knowledge(%)	Poor Knowledge(%)	Good knowledge(%)	Total(%)	SIGNIFICANCE
Gender	Male	23(14.0)	106(64.6)	35(21.3)	164 (100)	χ2=2.677
	Female	41(20)	118(57.5)	46(22.4)	205	p 0.262
	MBBS	00	70(58.3)	50(41.6)	120	
Courses enrolled	BDS	01(1.26)	66(83.5)	12(15.18)	79	$\chi 2 = 133.758$
Courses enrolled	BHMS	15(21.7)	39(56.5)	15(21.7)	69	p <0.001*
	NURSING	48(47.5)	49(48.5)	04(3.9)	101	
	Yes	0	129(70.4)	54(29.5)	183	2-271 471
Willingness to donate eyes	No	0	95(77.8)	27(22.13)	122	$\chi 2 = 371.471$
	Not sure	64(100)	0	0	64	p <0.001*

<sup>\*</sup>Statistical significance p<0.05; # Yates's continuity correction applied

Table 4: Response to attitude-based questions. (add percentage)

		MBBS	BDS	BHMS	NURSING	Total(%)	SIGNIFICANCE
Question 1. According to you is there a scarcity of donor eyes in relation to the requirement in India?	Yes	101(42.4)	60(25.2)	36(15.12)	41(17.2)	238(100)	
	No	19(28.3)	18(26.8)	18(26.8)	12(17.9)	67	χ2=111.644 p <0.001*
	Not sure	00	01(14.7)	15(22.0)	48(70.5)	68	
Question 2. Are you willing to donate your eyes?	Yes	84(45.9)	46(25.13)	21(11.4)	32(17.4)	183	
	No	36(29.5)	32(26.2)	33(27.0)	21(17.2)	122	χ2=120.114 p <0.001*
	Not sure	00	01(15.6)	15(23.4)	48(75)	64	

<sup>\*</sup>Statistical significance p<0.05; # Yates's continuity correction applied

# **DISCUSSION**

Most cases of corneal blindness are treatable by corneal transplant. Numerous advances in keratoplasty like DSEK, DMEK, DALK etc. have

revolutionized management of corneal blindness. But the real success of corneal transplanation program is dependent on voluntary eye donation. Thus, to increase eye donation, proper knowledge and positive attitude in public and medical fraternity is extremely important. In our study parents' education status, parent's occupation and students' religion had no role in their knowledge and attitude. In few studies by Paraz CM et al,<sup>[7]</sup> & Yew Y et al,<sup>[8]</sup> they reported that Muslims are less willing to donate cornea than other communities. In our study there was disproportionate representation of religions which might have influenced the results.

In present study, almost all MBBS and BDS students have heard about eye donation, but around 20% BHMS & 50% Nursing students had no clue about it. This in in contrast to a study by Gupta A et al, who reported that 85% of nursing students were either registered donors or were willing for donation. Yadav SK et al, also reported a high level of knowledge among nursing students in his study. Like our study Parija S et al, and Chowdhury RK et al, from Eastern India and Janti S et al, from Southern India also reported higher knowledge in MBBS students than Nursing and Paramedics.

Major section of students across all the courses knew that only cornea is transplanted and optimal time after death for retrieval of eyes is less than 6 hours but to our surprise 60% of all students believed that living humans can also donate the eyes. Knowledge regarding role of family in consent is also poor. Many students also think that monetary compensation is given in return for eye donation. Thus, not only the medical aspects but a clear understanding of legal issues pertaining to eye donation should be included and emphasized in teaching and learning programme.

The main source of information were teachers in case of MBBS students followed by social media and mass media. Media was the primary source of information in case of paramedic students. Social media is a source of information along with a lot of misinformation ,does have a chance to misguide rather than giving a positive impact. Majority studies report mass media and public campaigns as the major source of information and thus these can be further exploited in creating awareness. [9,14,15,16,17] In the current study more MBBS students (70%) were willing to donate the eyes than paramedics. In spite of low knowledge among Nursing students their willingness to donate eyes was almost like MBBS (60%). The willingness for eye donation in our study was much greater than many Indian and International studies such as by Sirisha R et al, [18] (64%), Rattan A et al,[19] (33%), Janti S et al,[13] (33%), Parija S et al,[11] (47.3%), Lal B et al,[14] (42.6%), Paraz CM,<sup>[7]</sup> from Singapore (31%), Eze BI20 from Nigeria (15%), Bharti MK,[21] from Malaysia (27%) and Afshar R,[22] from Iran (67.5%). Study by Chowdhury RK et al, [12] (88% in MBBS and 79.1 % Nursing) showed even higher inclination towards eye donation. In the present study irrespective of the willingness to donate the eyes only one student has pledged for eye donation, the reason reported by majority students was lack of knowledge of the procedure followed by objection

from family. This discrepancy between the attitude and practice pattern needs to be addressed.

#### **CONCLUSION**

We found that knowledge of MBBS students was much higher than paramedics. Nursing students are the spine of healthcare system, but it was saddening to see such low level of awareness in them. The mismatch between the positive attitude to donate the eyes and its practice pattern in terms of pledging is a matter of concern. We recommend educational programmes at college level dedicated to medical and paramedical students. We also advocate for increased participation and involvement of medical students in community-based eye donation awareness campaigns.

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