

Original article

Eye donation awareness among medical and paramedical staff in a medical institute

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Abstract

Introduction: Corneal diseases constitute a significant cause of visual impairment and blindness in the developing world. The number of corneal transplants done is far less than required due to the lack of donor cornea. A well-informed and motivated medical and paramedical staff can increase the rate of eye donation by counseling grief-stricken relatives of the deceased for eye donation. **Objective:** To assess the awareness of the medical and paramedical staff of a medical institute about eye donation. **Materials and methods:** This was a cross-sectional study. A self-designed, standardized, single-response type questionnaire on eye donation awareness was prepared and circulated in all the departments of our institute. **Results:** Of the 395 participants, 317 (80.5%) were aware of eye donation, 312 (80%) knew that the cornea is used for eye donation and 294 (76%) knew that the ideal time for eye donation is within six hours of death. Only 286 (72.4%) knew about pledging for eye donation and only 251 (65.4%) consented for a pledge of their eyes. Of those who did not want to pledge, 12 (14.8%) had religious reasons, 9 (11.1%) feared disfigurement, 9 (11.1%) thought that they might be born blind in their next birth and 51 (63%) had some other reasons. **Conclusion:** There is a need for regular eye donation awareness programs not only in the community but even for the medical and paramedical staff in hospitals and medical colleges. This will ultimately enhance the eye donation program in the country to help cope with the backlog in the long term.

Keywords: eye donation, corneal blindness, visual impairment

Introduction

Diseases affecting the cornea are a major cause of blindness worldwide, second only to cataract. Approximately 18.7 million people are blind in India (Dandona L et al 2001) and 190,000 people are blind from bilateral corneal disease (Report of the national survey by the national program for the control of blindness, India, and the World Health Organization, 1986-89) and every year another 20,000 join the list (Saini JS et al, 1996). A recent study from South India reported the

prevalence of corneal blindness as 0.13% (95% CI: 0.06-0.24). This constituted 9 % of all the blindness reported in this study (Dandona L et al 2001).

Ocular trauma and corneal ulceration are significant causes of corneal blindness in developing countries (Smith GTH et al 1991); these are often under-reported, but may be responsible for 1.5- 2 million new cases of monocular blindness every year. It is estimated that approximately 840,000 persons develop a corneal ulcer every year in India, which is 30 times the number of corneal ulcers seen yearly in the United States (Gonzales CA et al 1996).

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The causes of childhood blindness include Xerophthalmia, Ophthalmia neonatorum and less frequently seen, ocular disease such as herpes simplex virus infection and vernal keratoconjunctivitis.

There is a severe shortage of donor eyes in India. The current cornea procurement rate is 22,000 per year and a significant number of donor cornea is unsuitable for corneal transplant (Dandona R et al 1999). We would need approximately 277,000 donor eyes to perform 100,000 corneal transplants in a year in this country (Saini JS 1997). This is approximately twenty times the number of donor eyes currently available in India.

The maximum number of deaths occurs in the hospitals. Since the present medical and nursing students are the future health-care providers for the community, well-informed medical students and the staff of the hospitals are expected to influence eye-donation rates. This study was designed to assess the awareness and attitude of medical and the paramedical staffs including the medical and the nursing students towards the cause of eye donation and their willingness to pledge their eyes.

Materials and methods

This was a prospective study, conducted in the year 2010-11, among the faculty, senior and junior residents, MBBS students, nursing students, nursing staff, paramedical and other staff members of our institute. A self-designed, standardized, single-response type questionnaire on eye donation awareness comprising 20 multiple choice questions was prepared and circulated in all the departments of our institute. The respondents were requested to answer all the questions without revealing their identity. All the participants were grouped into any one of the following categories: **1.** Faculty **2.** Residents (Junior and Senior) **3.** MBBS students **4.** Staff nurses **5.** Nursing students **6.** Paramedical staff **7.** Others including the ministerial staff.

Statistics

The responses were compared and statistically analyzed using chi-square test. Those participants who did not mark any response for a particular question were not included in the statistical analysis of the responses to that question. The statistical values have been given in the tables.

The questionnaire on eye-donation awareness:

Q 1: What is an eye donation ?

- a) Donation of eyes just before death
- b) Donation of eyes after death
- c) Donation of eyes anytime during life

Q 2: Which part of the eye is used for an eye donation ?

- a) The whole eye ball
- b) The cornea (or the anterior transparent layer of eyeball)
- c) The retina (or the 'parda')
- d) Both the cornea and retina

Q 3: Who can benefit from an eye donation ?

- a) Corneal blind person
- b) Retinal blind person
- c) Any type of blind person

Q 4: Who can donate the eyes ?

- a) People of any age
- b) Only people above 60 years of age
- c) Only adults

Q 5: Who cannot donate the eyes ?

- a) Diabetics
- b) Hypertensives
- c) Infants
- d) All of the above can donate their eyes

Q 6: Who cannot donate the eyes ?

- a) People wearing glasses
- b) People in whom some eye surgery had been performed
- c) People with retinal diseases but having transparent cornea
- d) All of the above can donate their eyes

Q 7: After death, eyes should be donated

- a) Within 6-8 hours
- b) Within 10 - 24 hours
- c) Anytime after death

Q 8: How much time does the eye removal take ?

- a) One hour
- b) 15 - 20 minutes
- c) More than one hour

Q 9: After eye removal :

- a) Face looks disfigured
- b) Orbital cavity is left empty
- c) Artificial prosthetic eye is placed in the orbit and face looks normal

Q 10: Who can remove the eyes from the donor ?

- a) Ophthalmologist

- b) Trained MBBS doctor or an ophthalmic assistant
c) Both a and b
- Q 11 : One donor can give eye sight to**
a) One blind person
b) Two blind persons
c) More than two blind persons
- Q 12 : After a corneal transplant, the recipient needs lifelong treatment.**
a) Yes
b) No
c) I do not know.
- Q 13 : Those who donate their eyes may be born blind in their next birth.**
Do you agree ?
a) Yes
b) No
c) I don't know.
- Q 14: Because of eye donation, you may not go to heaven after death.**
Do you believe in this ?
a) Yes
b) No
c) I don't know.
- Q15 : Do the relatives of donors get any money for eye donation ?**
a) Yes
b) No
c) I don't know.
- Q16 : The corneal blind recipient gets cornea free of cost.**
a) Yes
b) No
c) I do not know.
- Q 17 : A pledge for an eye donation means:**
a) It is same as an eye donation.
b) A commitment by the donor for an eye donation after death
c) A commitment by the relatives for an eye donation after death
- Q 18 : Would you like to pledge an eye donation ?**
a) Yes
b) No
c) I will think about this.
- Q 19 : If the answer to the above question is 'No', the reason/reasons for that is/are**
a) Religious
b) Fear of disfigurement
c) I may be born blind in my next birth.
d) Any other reason/reasons
- Q 20 : In the GMCH, Chandigarh, a corneal transplant facility is available in the Department of Ophthalmology**
a) Yes
b) No
c) I do not know.

Results

Of the 395 participants of this study, there were 25 faculty members, 24 residents, 144 MBBS students, 99 staff nurses, 50 nursing students, 29 paramedical staff and 24 in the other category which included the ministerial staff of various departments.

Of the 395 respondents, 317(80.5%) were aware of eye donation and only 312(80%) respondents knew that the cornea is used for eye donation and only 294 (76%) knew that the ideal time for eye donation is within 6 hours of death. Three hundred and five (78%) participants had the knowledge that the corneal blind can be benefit from eye donation. However, only 6(1.5%) respondents thought that a retinal blind can be benefit and 77(19.8%) thought that any kind of blind person can be benefit from a corneal transplant. Six (1.5%) participants thought that only people older than 60 years can donate their eyes and 69(17.5%) believed that only adults can donate their eyes. One hundred and five (27.8%) of the subjects thought that a diabetic cannot donate his eyes and 85(22.5%) responded that eyes of an infant cannot be donated. Forty-four (12%) of the respondent thought that a person who has undergone eye surgery cannot donate eyes; and 64(17.4%) of the participants thought that a person with retinal disease but clear cornea cannot do so. When the responses of the different groups were compared, 30 MBBS students (20.8%) did not know about eye donation whereas 18 staff nurses (18.2%) and 12 nursing students (22.4 %) did not know about the same. We did not compare the responses of other groups as their numbers were small. Thirty-three (21.8%) of the MBBS students, 20(19.4%) of the staff nurses and 3(6%) of the nursing students did not know which part of eye is used for eye donation. Similarly 26(17.5%) of the MBBS students, 21(19.6%) of the nursing staff and 14(25%) of the nursing students responded that a retinal blind or any type of blind person can be benefit from an eye donation. Thirty-nine

(26.6%) of the MBBS students, 12(12.1%) of the nursing staff and 10(20%) of the nursing students did not know persons of any age can donate their eyes. That a diabetic cannot donate his eyes was believed by 47(33%) of the MBBS students, 30(31%) of the staff nurses and 17(35.4%) of the nursing students. Sixteen (11.3%) of the MBBS students, 34(35.4%) of the staff nurses and 13(27.1%) of the nursing students responded that infants cannot donate their eyes. The answer that persons in whom some eye surgery has been performed cannot donate their eyes was marked by 16(11.3%) of the MBBS students, 5(5.3%) of the staff nurses and 11(26.8%) of the nursing students. Similarly, 21(14.8%) of the medical students, 28(29.8%) of the staff nurses and 8(19.5%) of the nursing students responded that a person with retinal disease but having clear cornea cannot donate eyes. One more aspect of eye donation which these groups were not very well aware of was the time of eye donation. Twenty-six (17.5%) of the MBBS students, 32(30.2%) of the staff nurses and 21(40.8%) of the nursing students did not know that the eye should be donated within 6-8 hours of death of the patient.

In our study, 286 out of 395 respondents, i.e., 72.4% knew what pledging for eye donation means; and 251(65.4%) were willing to pledge their eyes while 27(7%) were not willing to do so, and 106(27.6%) responded that they would think whether they would donate their eyes or not. Of those who did not want to pledge, 12(14.8%) had religious reason, 9(11.1%) feared disfigurement and 9(11.1%) thought that they might be born blind in their next birth while 51(63%) had some other reasons.

It was very surprising that 5(4.9%) of the MBBS students believed that those who donate their eyes might be born blind in their next birth. Similarly, 7(4.9%) of the medical students and 2(4.1%) of the nursing students responded that if one donates eyes, one may not go to heaven after death. Thirty-two (21.1%) of the medical students, 24(30.5%) of the staff nurses and 18(28.9%) of the nursing students did not know what a pledge for eye donation meant and 63(43.4%) of the MBBS students, 20(17.7%) of the staff nurses and 23(43.7%) of the nursing students were not willing to donate their eyes.

Table 1: Eye donation awareness among the medical students and staff (Number of correct response by various categories)

Questions	Faculty No.(%)	Resident No. (%)	MBBS students No.(%)	Staff Nurse No. (%)	Nursing students No. (%)	Paramedical staff No. (%)	GMCH staff No. (%)	Total	P Value #
Q1*	19 (76%)	18 (75%)	114 (79.2%)	81 (81.8%)	38 (77.6%)	27 (93.1%)	20 (83.3%)	317 (80.5%)	.63
Q2*	21 (84.0%)	18 (75%)	111 (78%)	79 (80.6%)	47 (94.0%)	18 (62.1%)	18 (81.8%)	312 (80.0%)	.02
Q3*	22 (88.0%)	19 (86.4%)	118 (82.5%)	78 (80.4%)	36 (75.0%)	18 (62.1%)	14 (58.3%)	305 (78.6%)	.04
Q5*	17 (73.9%)	14 (66.7%)	73 (51.4%)	30 (31.3%)	15 (31.3%)	15 (57.7%)	12 (54.5%)	176 (46.6%)	.00
Q6*	18 (78.3%)	18 (85.7%)	102 (71.8%)	60 (63.8%)	17 (41.5%)	17 (65.4%)	14 (66.7%)	246 (66.8%)	.00
Q7*	23 (95.8%)	19 (82.6%)	118 (82.5%)	67 (69.8%)	29 (59.2%)	18 (64.3%)	20 (83.3%)	294 (76%)	.01

*Question numbers are the same as given in the questionnaire # test used- Chi square test

Table 2: Responses to Questions 1-10

C	R	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
		%	%	%	%	%	%	%	%	%	%
1	1	0	0	88	88	13	0	95.8	8	0	28
	2	76	84	4	0	0	21.7	4.2	92	4.2	4
	3	24	0	8	12	13	0	0	0	95.8	68
	4	x	16	X	x	73.9	78.3	X	X	X	X
2	1	4.2	20.8	86.4	79.2	4.8	0	82.6	4.8	4.3	34.8
	2	75	75	0	0	0	4.8	17.4	90.5	26.1	13
	3	20.8	0	13.6	20.8	28.6	9.5	0	4.8	69.6	52.2
	4	x	4.2	X	x	66.7	85.7	X	X	X	X
3	1	6.9	9.2	82.5	73.4	33.1	2.1	82.5	14.2	2.8	48.6
	2	79.2	78.2	2.1	2.1	4.2	11.3	14.0	79.4	19.7	4.2
	3	13.9	1.4	15.4	24.5	11.3	14.8	3.5	6.4	77.5	47.2
	4	x	11.3	X	X	51.4	71.8	X	X	X	X
4	1	5.1	7.1	80.4	87.9	31.3	1.1	69.8	9.6	7.4	64.9
	2	81.8	80.6	2.1	1	2.1	5.3	24	78.7	6.4	15.5
	3	13.1	5.1	17.5	11.1	35.4	29.8	6.3	11.7	86.2	19.6
	4	x	7.1	X	X	31.3	63.8	X	X	X	X
5	1	6.1	2	75	80	35.4	12.2	59.2	20.5	4.2	86.0
	2	77.6	94	0	2	6.3	26.8	36.7	63.6	6.3	2
	3	16.3	2	25	18	27.1	19.5	4.1	15.9	89.6	12
	4	x	2	X	X	31.3	41.5	X	X	X	X
6	1	0	13.8	62.1	86.2	11.5	11.5	64.3	14.8	7.4	51.7
	2	93.1	62.1	0	0	3.8	11.5	32.1	85.2	7.4	13.8
	3	6.9	0	37.9	13.8	26.9	11.5	3.6	0	85.2	34.5
	4	x	24.1	X	X	57.7	65.4	X	X	X	X
7	1	0	9.1	58.3	87.5	18.2	9.5	83.3	20	4.5	45.8
	2	83.3	81.8	0	4.2	0	14.3	12.5	50	27.3	16.7
	3	16.7	0	41.7	8.3	27.3	9.5	4.2	30	68.2	37.5
	4	x	9.1	X	x	54.5	66.7	X	X	x	X

C -Category (C1- Faculty, C2- Residents, C3- MBBS students, C4- Staff nurses, C5: Nursing students; C6: Paramedical staff; C7: GMCH staff; R: Responses

Table 3: Responses to Questions 11-20

C	R	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
		%	%	%	%	%	%	%	%	%	%
1	1	8	4.2	0	0	0	76	0	68	20	88
	2	76	79.2	88	92	83.3	8	100	4	0	0
	3	16	16.7	12	8	16.7	16	0	28	0	12
	4	X	X	X	X	X	X	X	X	80	X
2	1	17.4	8.7	0	0	4.5	60.9	17.4	60.9	0	66.7
	2	78.3	87	95.7	91.3	77.3	17.4	73.9	13	0	0
	3	4.3	4.3	4.3	8.7	18.2	21.7	8.7	26.1	0	33.3
	4	X	X	X	X	X	X	X	X	100	X
3	1	16.7	6.3	4.9	4.9	12.7	49	5.6	56.6	15.6	85.1
	2	68.8	70.8	89.6	90.3	64.1	18.2	78.9	11.9	9.4	2.8
	3	14.6	22.9	5.6	4.9	23.2	32.9	15.5	31.5	15.6	12.1
	4	X	X	X	X	X	X	X	X	59.4	X

4	1	22.1	21.3	0	0	3.1	71.4	11.6	82.3	29.4	89.8
	2	74.7	57.4	96.9	93.8	83.7	15.3	69.5	4.2	17.6	3.4
	3	3.2	21.3	3.1	6.2	13.3	13.3	18.9	13.5	5.9	6.8
	4	X	X	X	X	X	X	X	X	47.1	X
5	1	29.2	18.4	0	4.1	10.4	32.6	17.8	56.3	0	83.7
	2	62.5	57.1	93.9	89.8	50	20.9	71.1	0	15.4	0
	3	8.3	24.5	6.1	6.1	39.6	46.5	11.1	43.8	15.4	16.3
	4	X	X	X	X	X	X	X	X	69.2	X
6	1	13.8	10.7	0	0	7.1	59.3	14.8	74.1	14.3	72.4
	2	75.9	67.9	89.7	86.2	71.4	22.2	74.1	0	0	3.4
	3	10.3	21.4	10.3	13.8	21.4	18.5	11.1	25.9	14.3	24.1
	4	X	X	X	X	X	X	X	X	71.4	X
7	1	33.3	13	4.2	4.3	0	68.2	9.1	59.1	0	79.2
	2	54.2	52.2	95.8	91.3	79.2	4.5	72.7	9.1	20	0
	3	12.5	34.8	0	4.3	20.8	27.3	18.2	31.8	0	20.8
	4	X	X	X	X	X	X	X	X	80	X

C: Category; C1: Faculty; C2: Residents; C3: MBBS students; C4: Staff nurses; C5: Nursing students; C6: Paramedical staff; C7: GMCH staff; R: Responses.

Discussion

A corneal transplant is the most successful among all organ transplant procedures. But unfortunately there is a shortage of donor corneas in the developing countries. The government is leaving no stone unturned to reach the masses for help with this problem with its apt campaigns and with the help of many organizations. There are almost innumerable non governmental organizations (NGO's) and eye banks working on the eye donation awareness project, but it is really perplexing that the donor rate is not increasing much with every passing year.

In our study, 317(80.5%) of the respondents were aware of eye donation among which 114 (79.2%) were medical students and 38(77.6%) were nursing students, compared to another study where 99.4% of the medical students (Singh MM et al, 2007) and 96.8% of the nursing students (Gupta A et al, 2009) were aware that eyes could be donated after death. In this study, 294(76%) of the respondents knew that the ideal time of donation is within 6 hours of death as compared to the study among medical students (Singh MM et al, 2007) where 50% knew the ideal time of eye donation and 32.8% of the nursing students (Gupta A et al, 2009) knew the same. Another study on medical and non-medical students also

observed that 79.6% of the students knew that eyes can be donated after death and 63.3% knew about the ideal time of donation (Dhaliwal U, 2002).

Our study observed that 251 (65.4%) of the respondents were willing for eye donation out of which 81(56.6%) were MBBS students and 27(56.3%) were nursing students. This number is very low compared to similar studies, where 94.4% of the medical students of Delhi (Singh MM et al, 2007) and 85.1% of the nursing students of Bangalore (Gupta A et al 2009) were willing for eye donation. Comparing this data with the eye donation awareness among the general population will be relevant: a study conducted in a rural population of Andhra Pradesh (Krishnaiah S et al, 2004) found that only 11.5% had knowledge about eye donation and only 32.9% of the subjects were willing for eye donation. In a study conducted among an adult population of southern India (Priyadarshini B et al, 2003), only 20% knew about corneal transplantation and only 4.34% knew about the ideal time period for eye donation.

In order to increase eye donation, it is essential to enhance the awareness of this among potential donors and dispel the misconceptions that



they might have. The attitude of medical professionals and nursing staff towards eye donation can also be expected to influence the donation rate. Hospital deaths are a good source of fresh tissue for treating corneal blindness, but hospitals fail to adequately exploit this resource. Of the total deaths occurring in India annually, 50 – 60% die in the hospitals (Indian Express, front page, Thursday, June 3, 1999). The Ramayamma International Eye Bank initiated the cornea retrieval program from hospitals in 1990 to concentrate on deaths that occur at the hospitals and to encourage eye donation using a combined method of motivation and grief counseling. The program involves trained counselors who are stationed in multi-specialty hospitals. They counsel and motivate a family to donate the eye of the deceased relative.

In Chandigarh, hospital deaths account for 70% of the urban deaths (Saini JS, 1997); and on assuming a similar ratio for the country, it should be feasible to achieve 50% coverage for soliciting eye donation if eye banks concentrate their resources on hospital deaths. This strategy should help the country have a ten-fold increase in the number of donor eyes. Thus, it is necessary to increase eye donation awareness within the hospital staff who can encourage eye donations by motivation and acting as grief counselors for the hospital deaths, which comprise a major chunk of the total deaths. Eye donation awareness programs should be organized in the hospitals to increase awareness among the hospital staff.

Conclusion

It is very clear from this and other similar studies that there is a lack of eye donation awareness not only in the general public but also amongst the medical and paramedical staff in our country. So it is very essential to try to raise the eye-donation awareness of the medical care providers simply because these are the people who can most effectively motivate the masses for eye donation. This will definitely help to

increase the number of eye donations and thereby to decrease the overall prevalence of corneal blindness in our country.

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