Knowledge and attitude towards eye donation among health professionals of northern India

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ABSTRACT

Background. We aimed to assess the knowledge and attitude of health professionals towards eye donation at an apex tertiary care centre of northern India.

Methods. We interviewed 600 health professionals, comprising doctors, nurses, medical as well as nursing students, social workers and allied paramedical staff. A structured questionnaire (12 questions for assessing knowledge and 5 questions for assessing attitude) was used to estimate the awareness of eye donation and willingness to pledge eyes for donation. The responses pertaining to knowledge were graded as 'excellent', 'good' and 'poor' and those pertaining to attitude were grouped into 'positive' and 'negative'.

Results. Of the 600 participants, 138 participants (23%) had 'excellent' knowledge and 234 participants (39%) had 'good' knowledge about eye donation. Awareness of eye donation was positively related to the level of literacy (odds ratio [OR] 8.5 [2.30–31.2]; $p<0.001$). Medical social workers and health supervisors had better knowledge about eye donation (OR 2.01 [1.08–3.72]; $p=0.026$) than other professional groups. Knowledge of eye donation had no significant association with age, gender, religion, family type and marital status of the respondent. Willingness to pledge eyes for donation was observed in only 6% of the participating health professionals. Pledging of eyes for donation was higher among older participants (OR 7.8 [2.67–22.77]; $p<0.001$).

Conclusion. Our study shows that there is sufficient knowledge about eye donation, but an alarmingly low willingness to pledge eyes for donation among health professionals. Concerted efforts are required to alter their attitude to strengthen the Hospital Cornea Retrieval Programme.

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INTRODUCTION

Corneal blindness is an important public health problem in India.[1] Approximately 0.46% of the adult Indian population suffers from corneal blindness which could have been treated by corneal transplantation. The Corneal Opacity Rural Epidemiological (CORE) study that was designed to generate population-based data on prevalence and causes of corneal morbidity and blindness in a rural North Indian population revealed prevalence of corneal disease to be 3.7% and that of corneal blindness to be 0.12%.[2,3] The annual need of corneal transplantation to remove the corneal blindness backlog is about 2.77 lakh corneal transplantations, whereas only 63 256 donor corneas were collected in the country during 2016–17.[4]

The Hospital Cornea Retrieval Programme (HCRP) was started in 1990, to focus on hospital-based deaths and encourage eye donation using a combined method of motivation and grief counselling. It had several advantages such as ready availability of a detailed medical history, availability of tissues from younger donors, reduction of death to corneal retrieval time and cost-effectiveness. Health professionals, including attending doctors, residents, nursing staff and paramedics play a major role in HCRP in counselling and motivating the relatives of the deceased and potential donors. For the past 5 decades, the National Eye Bank, All India Institute of Medical Sciences (AIIMS), New Delhi, has been serving as a non-profitable centre and playing a leading role in policy-making, research, training and corneal transplantation activities. The HCRP has proved to be the backbone for procurement of human corneas at the National Eye Bank, New Delhi. As health professionals can counsel and motivate relatives of deceased patients in the hospital and play a key role in the HCRP for eye donation, we aimed to assess the knowledge and attitude towards eye donation among health professionals.

METHODS

We did the study at a tertiary eye care centre in northern India during January to June 2012. The study was designed in accordance with the tenets of Helsinki, and after obtaining ethical clearance from the Institute Ethics Committee, the study was commenced. In this cross-sectional study a closed-ended questionnaire was administered to the eligible participants in their local language. Medical social workers were trained to administer the questionnaire to health professionals of the hospital and record responses appropriately. The study population including health professionals such as doctors, nursing staff, research staff and students, technicians and paramedical staff were interviewed. Pretesting and piloting of the administered questions were carried out on 50 healthcare professionals in the tertiary eye care centre.

The sociodemographic characteristics such as age, gender, religion, level of literacy, occupation, religion, type of family and marital status were noted. The responses to the questions regarding knowledge and attitude towards eye donation were

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noted verbatim in the questionnaire. Twelve questions focused on the areas related to knowledge about eye donation and five questions attempted to assess the attitude and willingness of the participants to pledge their eyes for donation. Depending on the response to the knowledge-based questions on awareness about eye donation, corneal transplantation and donor preservation, 'knowledge' was scored between 0 and 3 depending on the correct responses by the participants. Based on one, two or all three correct responses by the participants, knowledge was graded as 'poor', 'good' and 'excellent', respectively. The attitude towards pledging of eyes by health professionals was then evaluated, by assessing the readiness of the study participants to register their eyes for donation.

The data were tabulated and statistical analysis was done using SPSS 20th edition software. All the quantitative data were compared using the chi-square test; $p<0.05$ was considered statistically significant.

RESULTS

Overall, 602 consenting health professionals were enrolled in the study and 600 completed the study questionnaire. The mean (SD) age of the study participants was 32.3 (9.0) years (youngest being 18 years and oldest being 68 years; Table I). Based on age, the participants were divided into three groups: 18–30 years (n=340), 31–50 years (n=232) and above 50 years (n=28). Age had no significant association with the level of awareness about eye donation (p=0.45). Of the total participants, 48.5% were females, and in terms of gender, no significant difference in knowledge was noted (p=0.3).

On assessment of knowledge regarding eye donation, 288 participants (38% [95% confidence interval, CI 34.1%–42.1%]) had poor knowledge about eye donation. Individuals with higher educational status (graduates and above) had better knowledge compared to those with lower educational levels (odds ratio [OR] 8.5; 95% CI 2.3–30.4; p=0.001). It was observed that social workers, optometrists and health supervisors had better knowledge about eye donation as compared to other health professionals (2.01 [95% CI 1.08–3.72; p=0.026]). There was no significant association between knowledge of eye donation and age, gender, religion or marital status of the participants as shown by adjusted multiple regression analysis (Table I). Interestingly, participants 31–50 years and >50 years were more likely to pledge their eyes for donation as compared to the younger age group (OR 7.8 [95% CI 2.67–22.77; p<0.0001] and OR 11.05 [95% CI 2.33–52.37; p=0.002]). Others factors such as gender, education, occupation, religion, family type and marital status did not have any significant effect on the willingness to pledge eyes (Table II). Overall, 599 (99.8%) respondents were aware of eye donation. The source of information was gathered largely from medical personnel (189 [31.6%]), television (142 [23.7%]) or teaching institutes (99 [16.5%]; Table III). Television was the most important source of information for eye donation for the paramedical staff including

TABLE I. Effect of age, gender, education, occupation, religion, family type and marital status on awareness of eye donation by multiple logistic regression

Characteristic	Total, *n* (%)	Knowledge, *n* (%)	Unadjusted OR for knowledge (95% CI)	p value	Adjusted OR for knowledge (95% CI)	p value
Age group (years)						
18–30	340 (56.8)	210 (61.8)	1.0	–	1.0	–
31–50	232 (38.6)	143 (61.6)	0.99 (0.7–1.4)	0.976	1.02 (0.6–1.6)	0.908
>50	28 (4.7)	19 (67.9)	1.31 (0.6–2.9)	0.524	1.90 (0.7–4.9)	0.185
Gender						
Male	309 (51.5)	175 (47.0)	1.0	0.005	1.0	0.088
Female	291 (48.5)	197 (52.9)	1.60 (1.1–2.2)		1.42 (0.9–2.1)	
Education						
Below primary	14 (2.3)	4 (1.0)	1.0	–	1.0	–
Primary to below graduate	276 (46.0)	138 (37.1)	2.50 (0.8–8.1)	0.129	3.15 (0.9–11.2)	0.076
Graduate and above	310 (51.7)	230 (61.8)	7.19 (2.2–23.6)	0.001	8.5 (2.3–30.4)	0.001
Occupation						
Doctors and nurses	141 (23.5)	103 (27.7)	3.08 (1.8–5.1)	<0.001	1.74 (0.9–3.3)	0.086
Research staff and students	55 (9.2)	37 (9.9)	2.33 (1.2–4.5)	0.012	1.29 (0.6–2.8)	0.511
Paramedical staff (professional)	110 (18.3)	82 (22.0)	3.33 (1.9–5.8)	<0.001	2.01 (1.0–3.7)	0.026
Paramedical staff (semi-professional)	168 (28.0)	91 (24.5)	1.34 (0.8–2.1)	0.213	0.90 (0.5–1.5)	0.709
Grade IV staff	126 (21.0)	59 (15.9)	1.0	–	1.0	–
Religion						
Hindu	515 (85.8)	308 (82.8)	1.0	–	1.0	–
Muslim	26 (4.3)	18 (4.8)	1.48 (0.6–3.4)	0.370	1.75 (0.7–4.4)	0.225
Christian	59 (9.8)	43 (11.6)	1.76 (0.9–3.2)	0.064	1.34 (0.6–2.7)	0.418
Family type						
Nuclear	404 (67.3)	266 (71.5)	1.0	–	1.0	–
Extended nuclear	120 (20.0)	63 (16.9)	0.57 (0.4–0.9)	0.008	0.81 (0.5–1.3)	0.378
Joint	66 (11.0)	38 (10.2)	0.70 (0.4–1.2)	0.194	0.74 (0.4–1.3)	0.327
Others	10 (1.7)	5 (1.3)	0.52 (0.1–1.8)	0.306	0.46 (0.1–1.8)	0.275
Marital status						
Married	384 (64.0)	241 (64.78)	1.0	0.609	1.0	0.524
Single	216 (36.0)	131 (35.22)	0.91 (0.65–1.29)		0.86 (0.54–1.36)	

OR odds ratio CI confidence interval

TABLE II. Effect of age, gender, education, occupation, religion, family type and marital status on willingness to pledge eyes by multiple regression analysis

Characteristic	Total	Willingness, *n* (%)	Unadjusted OR for willingness (95% CI)	p value	Adjusted OR for willingness (95% CI)	p value
Age group (years)						
18–30	340	9 (25.0)	1.0 –	1.0	–	
31–50	232	23 (63.9)	4.04 (1.8–8.9)	0.001	7.8 (2.7–22.7)	<0.001
>50	28	4 (11.1)	6.12 (1.7–21.4)	0.004	11.05 (2.3–52.4)	0.002
Gender						
Male	309	16 (44.4)	1.0	0.384	1.0	0.653
Female	291	20 (55.6)	1.35 (0.7–2.7)		1.20 (0.5–2.7)	
Education						
Below primary	14	0	Indeterminate	–	Indeterminate	–
Primary to below graduate	276	13 (36.1)				
Graduate and above	310	23 (63.9)				
Occupation						
Doctors and nurses	141	12 (33.3)	1.86 (0.7–5.1)	0.229	1.06 (0.3–3.7)	0.918
Research staff and students	55	3 (8.0)	1.15 (0.3–4.8)	0.844	0.86 (0.2–4.5)	0.860
Office employees	110	8 (22.2)	1.56 (0.5–4.6)	0.419	0.95 (0.3–3.2)	0.935
Paramedical staff	168	7 (19.4)	0.86 (0.28–2.6)	0.806	0.57 (0.2–1.9)	0.370
Grade IV staff	126	6 (16.7)	1.0	–	1.0	–
Religion						
Hindu	515	31 (86.1)	1.0	–	1.0	–
Muslim	26	1 (2.8)	0.62 (0.81–4.76)	0.650	0.66 (0.07–5.5)	0.708
Christian	59	4 (11.1)	0.86 (0.28–2.6)	0.817	0.73 (0.2–2.6)	0.632
Family type						
Nuclear	404	21 (58.3)	1.0	–	1.0	–
Extended nuclear	120	9 (25.0)	1.47 (0.6–3.3)	0.343	1.7 (0.7–4.3)	0.253
Joint	66	4 (11.1)	1.17 (0.4–3.5)	0.772	1.16 (0.4–3.8)	0.795
Others	10	2 (5.6)	4.55 (0.9–22.8)	0.065	4.89 (0.8–30.8)	0.090
Marital status						
Married	384	25 (69.4)	1.0	0.484	1.0	0.114
Single	216	11 (30.6)	0.77 (0.4–1.6)		2.30 (0.8–6.5)	

OR odds ratio CI confidence interval

TABLE III. Responses of 600 participants to knowledge-based questions

Questions	Affirmative response, *n* (%)
Have you heard of eye donation?	599 (99.8)
Where did you hear about eye donation?	
Newspaper	41 (6.9)
Television	142 (23.7)
Radio	28 (4.7)
Internet	1 (0.2)
Medical personnel	189 (31.5)
Teaching institute	99 (16.5)
Family, relatives, friends	24 (4.0)
Self-discovery (e.g. contact with patient, visit to hospital, etc.)	52 (8.7)
Others	23 (3.8)
Do you know, how corneas are procured and preserved?	149 (24.8)
Do you know, what kind of blindness can be corrected by corneal transplantation?	361 (60.2)

counsellors, health workers (27.4%, p=0.001) as well as social workers and health supervisors (22.7%, p=0.005) when compared to doctors and nurses who benefited from teaching institutes such as schools and colleges (22.7%, p=0.003).

The attitude towards eye donation was assessed by asking the participants if they had pledged their eyes for donation. Only 36 (6%) health professionals had already pledged their eyes. The factors for not pledging were paucity of time (141 [25%]), personal reasons (266 [47.2%]) and other reasons (130 [23%]) like not giving a serious thought to the subject (Table IV).

TABLE IV. Responses of 600 participants to attitude-based questions

Questions	Responses, *n* (%)
Have you pledged your eyes for donation?	
Yes	36 (6.0)
No	564 (94.0)
Why have you not pledged your eyes?	141 (25.0)
Paucity of time	25 (4.4)
Religious beliefs	266 (47.2)
Personal reasons	2 (0.3)
Disfigurement of body	130 (23.0)
Other reasons	22 (17.9)
Unaware of the whole procedure of pledging	93 (75.6)
Have not thought about it seriously	5 (4.1)
Medical reasons (hepatitis B-positive, diabetes)	2 (1.6)
Family dissuasion	1 (0.8)
Fear of eye donation	7 (5.3)

DISCUSSION

Enhancement of awareness about eye donation is essential, to keep pace with the high demand for corneal tissue in developing countries, where the burden of corneal blindness is the greatest.

Our study shows that there was sufficient knowledge about eye donation in over 50% of health professionals at our apex tertiary care centre. However, in terms of willingness, only 6% were ready to pledge their eyes. These results imply that although awareness campaigns among health professionals have been carried out, these have not made an impact on the frequency with which people pledge their eyes. Health professionals with the right knowledge and attitude towards eye donation can motivate their patients and relatives to pledge their eyes, which in turn can generate tremendous impact on the turnover of eyes through the HCRP. Similar studies have been done among medical students of New Delhi in 2002[2] and 2007[3] and showed increased awareness about eye donation from 79.6% to 99.4%, respectively. Studies by Eze *et al.* and Ogawa *et al.* reported deficits in knowledge and attitude about eye donation and corneal transplantation in non-medical undergraduates compared to medical undergraduates.[4,5]

We found no significant association between knowledge of eye donation and age, gender, religion or marital status of the participants. Contrary to this, a study done in Singapore reported poor knowledge among youth regarding corneal donation and transplantation.[6]

Due to gradual stepping up of awareness programmes, improvement in knowledge is expected. Health professionals with lesser education level had poor awareness about the subject. Although well-educated professionals had sufficient knowledge about eye donation, it has not led to a change in their attitude towards pledging their eyes, which implies that the acquired knowledge failed to alter their attitude. Similarly, another study observed that willingness to pledge eyes was not influenced by prior knowledge of eye donation, literacy status and socioeconomic status. However, reasons such as dissuasion by distant relatives, legal problems, and religious beliefs were reported as major barriers for unwillingness.[7]

In our study, a major barrier for not pledging eyes was attributed to 'no serious thought given to eye donation'. Considering these findings, there is a need to reinforce health professionals, especially doctors who certify deaths and allied nursing staff to be trained regularly in grief counselling and motivation. Gogate *et al.* have aptly described health professionals as the 'catalyst' who can facilitate eye donation and improve donor cornea retrieval rates.[8] A trained health professional can counsel relatives of the deceased during the first few crucial hours after death and can emphasize the triple benefits of eye donation in terms of potential vision for two blind people as well as a good deed in the name of the deceased.[3] A study in southern India studied awareness among stakeholders which included donors, their family, community, beneficiaries of corneal donation, surgeons, hospital staff, staff of eye banking facilities and the general population. They found higher awareness levels and willingness to donate eyes among stakeholders.[9]

Though the mass media remains an essential tool to spread awareness, it is still insufficient to improve harvesting from donors. Yadav *et al*. reported newspapers (34.3%) as the most common source of knowledge on eye donation, followed by television (33.5%), eye specialists (17%), doctors (11.3%) and health workers (3.8%).[10] Similarly, Sadana *et al*. showed that newspapers (64.8%) contributed as an important source of information about eye donation.[11]

A pivotal role is played by the 'catalysts' who facilitate the reaction. Perhaps, regular training, continuous medical education for doctors and nurses about eye donation and periodic campaigns can bring a change. We observed that knowledge about eye donation was acquired by doctors and nurses largely from institutions where they received their professional training, and hence inclusion of eye banking in the curriculum of teaching institutions can promote eye donation in the long run.

Ours was a large study comprising health professionals from an apex institute of the country. It provides us an insight for improving and strengthening the HCRP. However, these data cannot be generalized to other regions of the country. Though we expect that the overall knowledge and attitudes among health professionals in the rest of the country are unlikely to be very different. Hence, to increase the knowledge and awareness about eye donation, first, practising doctors and students who are or will be providers of education about eye donation should be educated. These are the people who can motivate relatives of patients for eye donation. Second, campaigns in the mass media to promote eye donation should be planned.

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Conflicts of interest. None declared

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