



Original Research Article

## Awareness and Perception Regarding Eye Donation among Adult Patients and Their Attendants in a Primary Health Centre, South India

Amruth M<sup>1\*</sup>, Annarao G Kulkarni<sup>2#</sup>, Suchit V Kamble<sup>3#</sup>, Sagar A Borker<sup>4#</sup>, Rekha R<sup>5#</sup>, Imaad M Ismail<sup>1S</sup>

<sup>1</sup>Assistant Professor, <sup>2</sup>Professor and Head, <sup>3</sup>Professor, <sup>4</sup>Associate Professor, <sup>5</sup>Lecturer;

\*Department of Community Medicine, Shridevi Institute of Medical Sciences & Research Hospital, NH-04, Sira Road, Tumkur - 572106, Karnataka, India.

#Department of Community Medicine, K.V.G. Medical College and Hospital, Sullia, Dakshina Kannada-574327.

<sup>S</sup>Department of Community Medicine, Kannur Medical College, Kannur, India.

Corresponding Author: Amruth M

Received: 17/07/2014

Revised: 05/08/2014

Accepted: 05/08/2014

### ABSTRACT

**Context:** Out of world's total 4crore blind population, one third resides in India. Corneal blindness accounts for 6million in our country and needs 2lakh donor eyes per year. But it is able to collect only 25,000 donor eyes per year. Hence there is a need for adequate awareness regarding eye donation in the rural community.

**Aims:** To assess the awareness and perception regarding eye donation among adult patients and their attendants in a Primary Health Centre; and to create awareness about eye donation among them.

**Settings and Design:** A cross-sectional study was conducted during 1<sup>st</sup> June to 30<sup>th</sup> June 2012 among the patients and their attendants aged more than 18yrs at Sampaje PHC attached to K.V.G. Medical College and Hospital, Sullia, Karnataka.

**Methods and Material:** A structured questionnaire was used to obtain information. All the study subjects were promoted for eye donation.

**Statistical analysis:** It was done using SPSS version 17. Binary logistic regression analysis was applied.

**Results:** Awareness of eye donation was observed in 92 (36.6%) subjects. Awareness was more among 18 to 45yrs age group (68.4%) and more among females than males. Out of 92 subjects, 47 (51%) were willing to donate eyes and it was more among the females than males. Education, occupation and income positively influenced the awareness and willingness.

**Conclusion:** Awareness and perception about eye donation was poor among the people around Sampaje PHC area and therefore, there is a great need to create awareness & motivate people to donate eyes.

**Key-words:** Eye-donation, awareness, patients, attendants, PHC.

### INTRODUCTION

WHO defines blindness as a visual acuity of less than 3/60 in the better eye with best possible correction. Worldwide around 284 million people are visually impaired. Of these, 39 million are blind, and 245 million

have moderate or severe visual impairment. Yet 80% of blindness is avoidable. 90% of people with visual impairments live in developing countries. Almost 65% of visually impaired people are over 50 years of age. 19 million children are visually

impaired. Without effective, major intervention, the number of blind people worldwide is projected to increase to 76 million by 2020. [1]

Out of world's total 4 crore blind populations, one third reside in India alone. Corneal blindness accounts for 25% of total 1.5 crore blinds in our country. Infections, injuries, malnutrition, degenerations and dystrophies are important causes of corneal blindness. India needs 2 lakh donor eyes per year to take care of corneal blinds in our country. It is able to collect only 25,000 donor eyes per year. [2]

If a cornea becomes irreparably damaged, there is only one solution - corneal transplant, which can only be performed using donated corneal tissue. Also known as keratoplasty, corneal transplant is performed by specially trained ophthalmologists who replace damaged corneas and correct conditions that would otherwise cause loss of eyesight. Corneal transplants have a success rate of approximately 95% and can usually be performed on an outpatient basis. As there is no substitute for human corneal tissue, without the generosity of cornea donors thousands of Indians will be left in the dark. [3]

Corneal transplantation is probably the most successful of all organ transplant procedures but it is dependent on people willing to pledge their eyes for donation and close relatives to be willing to honor that pledge upon death of the person. Hence there is a need for adequate awareness regarding eye donation in the community. Further adults can inform, guide community members as well as their relatives at large & motivate them for eye donation and also enhance the eye donation rates. [4]

Hence this study was conducted to assess the awareness and perception regarding eye donation among adult patients and their attendants in Sampaje PHC, South India.

## **MATERIALS AND METHODS**

A descriptive cross-sectional study was conducted during 1<sup>st</sup> June to 30<sup>th</sup> June 2012 among the patients and their attendants at the Sampaje PHC. Sampaje is a rural place in Sullia Taluk of Dakshina Kannada district of Karnataka state, India. It is located 110km distance from its District Main City Mangalore. Primary Health Centre of Sampaje is attached to K.V.G. Medical College & Hospital, Sullia. It covers a population of 18350.

All the adult patients and their attendants aged more than 18years, who visited the OPD of Sampaje PHC are included in the study. Those who were less than 18years cannot pledge for eye donation and those who were not willing to participate were excluded from the study. A total of 251 participants participated in the study consisting of 155 patients and 96 attendants. A pre-tested structured questionnaire was used to obtain information about the awareness and perception regarding eye donation. The questionnaire included questions pertaining to socio-demographic profile, awareness and perception about eye donation and willingness to donate eyes. "Awareness" was considered as having a realization about the fact that a dead individual's eyes can be utilized to give vision for those blind from corneal disease. "Perception" was considered as the way the people have understood about the importance of eye donation.

The data analysis was done using SPSS (Statistical Package for the Social Sciences) for Windows, version 17. Binary logistic regression analysis was applied to find any significant association between awareness and willingness of eye donation and different variables.

## **RESULTS**

A total of 251 participants participated in the study. The mean age of the participants was 44.44 years (standard deviation [SD]-14.9 years) with a range of 18–80 years. A slight female preponderance of 62.9% was seen. Out of 251 subjects 145 were from Sampaje village and the remaining subjects were from neighbouring villages such as Chembu, Madenadu, Kallugundi, Goonadka, Jodpala, Koinadu, Dabbadka, Devarakolli and others. The religion distribution was 208 (82.9%) Hindus, 38 (15.1%) Muslims, and 5 (2%) Christians. 73 participants were Illiterate (29.1%), 5 had non-formal education (2%), 32 had primary school (1-4) (12.7%), 49 had middle school (5-7) (19.5), 58 had high school (8-10) (23.1%), 34 had college (>10) (13.5%) education. The awareness of eye donation was found to be 36.6% ( $n = 92$ ). Binary logistic regression

analysis showed that the individuals of the younger age group (18–45 years), men, those with non-formal education and higher education level (middle school and above), individuals of unskilled worker, clerical/shop/farm worker, semi-professional and professional occupation and those belonging to upper lower class, lower middle class and upper class of income according to Modified B.G. Prasad's classification for 2010 were more aware of eye donation [Table 1].

Although Muslims and Christians were more aware of eye donation compared to Hindus, Hindus were more willing to donate eyes. There was no statistically significant association found between the religion and awareness and religion and willingness of eye donation [Table 1].

Table 1: Binary logistic regression analysis showing the association between awareness of eye donation and various variables (N=251)

Variable	N	Awareness N (%)	Adjusted odds ratio (95% C.I)	Pvalue
<b>Age group</b>				
18 – 45	132	63 (47.7)	2.834 (1.651-4.863)	0.000*
46 – 80	119	29 (24.3)	1	
<b>Gender</b>				0.184
Male	93	39 (41.9)	1.431 (0.844-2.426)	
Female	158	53 (33.5)	1	
<b>Education</b>				
Illiterate	73	12 (16.4)	1	
Non-formal education	5	3 (60.0)	7.625 (1.148 - 50.636)	0.035*
Primary school(1-4)	32	9 (28.1)	1.989 (0.740 - 5.345 )	0.173
middle school(5-7)	49	20 (40.8)	3.506 (1.512 - 8.130)	0.003*
High school(8-10)	58	25 (43.1)	3.851 (1.716 - 8.641)	0.001*
College(>10)	34	23 (67.6)	10.629 (4.117 -27.437)	0.000*
<b>Occupation</b>				
Unemployed	116	30 (25.8)	1	
Unskilled worker	85	36 (42.3)	2.106 (1.158 - 3.831)	0.015*
Skilled worker	16	5 (31.2)	1.303 (0.418 - 4.058)	0.648
Clerical/shop/farm	18	9 (50.0)	2.867 (1.041 - 7.895)	0.042*
Semi-professional	10	7 (70.0)	6.689 (1.625 - 27.532)	0.008*
Professional	6	5 (83.3)	14.333 (1.609 -27.673)	0.017*
<b>Income</b>				
Lower class (<602)	31	18 (58.0)	1	
Upper lower (603- 1204)	16	4 (25.0)	0.241 (0.063 - 0.917)	0.037*
Lower middle (1205-2008)	26	8 (30.7)	0.321 (0.107 - 0.961)	0.042*
Upper middle (2009-4017)	41	15 (36.5)	0.417 (0.160 - 1.083)	0.072
Upper class (>4018)	137	47 (34.3)	0.377 (0.170 - 0.836)	0.016*
<b>Religion</b>				
Hindu	208	74 (35.5)	1	
Muslim	38	15 (39.4)	1.181 (0.581-2.401)	0.646
Christian	5	3 (60.0)	2.716 (0.444 - 16.623)	0.280

\* Significant at 5% level of significance

Out of 92 participants, who were aware of eye donation, 47 (51%) were willing to donate eyes. Binary logistic regression analysis showed that the individuals of the younger age group (18–45 years), men, those with a higher education

level (middle school and above) and individuals of semi-professional and professional occupation and belonging to upper class were more willing to donate eyes [Table 2].

Table 2: Binary logistic regression analysis showing the association between willingness of eye donation and various variables (N=92)

Variable	N	Willingness N (%)	Adjusted odds ratio (95% C.I)	Pvalue
<b>Age group</b>				
18 – 45	63	36 (57.1)	2.182 (0.886-5.371)	0.090
46 – 80	29	11 (37.9)	1	
<b>Gender</b>				
Male	39	25 (64.1)	2.516 (1.073-5.901)	0.034*
Female	53	22 (41.5)	1	
<b>Education</b>				
Illiterate	12	2 (16.6)	1	
Non-formal education	3	1 (33.0)	2.500 (0.146 -42.800)	0.527
Primary school (1-4)	9	2 (22.2)	1.429 (0.161 - 12.701)	0.749
middle school (5-7)	20	11 (55.0)	6.111 (1.056 - 35.352)	0.043*
High school (8-10)	25	14 (56.0)	6.364 (1.149 - 35.229)	0.034*
College (>10)	23	17 (73.9)	14.167 (2.387 -4.070)	0.004*
<b>Occupation</b>				
Unemployed	30	15 (50.0)	1	
Unskilled worker	36	14 (38.8)	0.636 (0.239 - 1.696)	0.366
Skilled worker	5	3 (60.0)	1.500 (0.218 - 10.304)	0.680
Clerical/shop/farm	9	5 (55.5)	1.250 (0.280 - 5.585)	0.770
Semi-professional	7	6 (85.7)	6.000 (0.642 - 56.062)	0.116
Professional	5	4 (80.0)	4.000 (0.399 - 40.105)	0.239
<b>Income</b>				
Lower class (<602)	18	10 (55.5)	1	
Upper lower (603- 1204)	4	0	0	-
Lower middle (1205-2008)	8	2 (25.0)	0.267 (0.042 - 1.697)	0.162
Upper middle (2009-4017)	15	5 (33.3)	0.400 (0.097 - 1.655)	0.206
Upper class (>4018)	47	30 (63.8)	1.412 (0.468 - 4.257)	0.540
<b>Religion</b>				
Hindu	74	40 (54.0)	1	
Muslim	15	6 (40.0)	0.567 (0.183 - 1.754)	0.324
Christian	3	1 (33.3)	0.425 (0.037 - 4.894)	0.493

\* Significant at 5% level of significance

Among those who were aware ( $n = 92$ ) about eye donation, 66.4% reported that the most important source of awareness was TV, magazine & other media. 69.6% participants did not know which part of the eye is removed. 13% reported that whole eyeball is removed and 13% reported that the cornea is removed for eye donation. 51.1% participants did not know the ideal time for donating eyes after death. 21.7% participants reported that the ideal time is within 24hrs after death and only 17.4% participants reported correctly as within 6hrs after death. 61 (65.2%) participants reported

that they did not know the contact place for eye donation and 22 (22.8%) participants reported correctly as eye bank. About what to be done after informing the relevant institution after death of their relative, 14 (15.2%) participants reported to keep the donor eyes closed, 35 (38.0%) participants reported as don't know and 45 (48.9%) participants reported as they want to ask a doctor. 17 (18.4%) participants reported that they will donate their close relatives eyes upon their untimely death. 36 (39.1%) participants reported that they will donate their close relatives eyes only if he had

indicated willingness and 41 (44.5%) participants reported as undecided [Table 3].

Table 3: Responses of study participants about perception of eye donation (N=92)

Source of information on eye donation	Number (%)
Doctor	5 (5.4)
Optometrist/nurse/other personnel	6 (6.5)
Family member/relative	14 (15.2)
TV/magazine/other media	61 (66.4)
Others	6 (6.5)
<b>Part of eye removed</b>	
Whole eyeball	12 (13.0)
Retina	2 (2.2)
Lens	2 (2.2)
Cornea	12 (13.0)
Don't know	64 (69.6)
<b>Eyes can be donated after death</b>	
Within 24 hours after death	20 (21.7)
Within 12 hours	9 (9.8)
Within 6 hours	16 (17.4)
Don't know	47 (51.1)
<b>Contact place for eye donation</b>	
Eye Bank	21 (22.8)
Medical college eye department	11 (12.0)
Don't know	60 (65.2)
<b>Relative should do after informing the institution about death</b>	
Don't know	33 (35.9)
Keep the donors eyes closed	14 (15.2)
Ask a doctor what to do	45 (48.9)
<b>Donate close relatives eyes upon untimely death</b>	
Yes	17 (18.5)
Only if he had indicated willingness	36 (39.1)
Undecided	39 (42.4)

33 (35.9%) participants knew about some person who has donated their eyes and only 8 (8.7%) knew about someone who has received eyes. 26 (28.2%) participants reported that there is an eye shortage in India. Only 16 (17.3%) participants reported that they have already pledged for eye donation. 30 (32.6%) participants were aware about buying and selling of donor eyes. 89 (96.8%) participants did not agree to sell donor eyes [Table 4].

Table 4: Responses of study participants about perception of eye donation (N=92)

VARIABLE	YES (%)	NO (%)
Knows someone who has donated eyes	33 (35.9)	59 (64.1)
Knows someone who has received eyes	8 (8.7)	84 (91.3)
Knows that there is an eye shortage in India	26 (28.2)	66 (71.8)
Already pledged to donate eyes	16 (17.3)	76 (82.7)
Aware about selling and buying donated eyes	30 (32.6)	62 (67.4)
Agree to sell donated eyes	3 (3.2)	89 (96.8)

Table 5: Responses of study participants about reasons for donating and not donating eyes (N=92)

Reason for donating eyes	Number (%)
Noble work	20 (21.8)
Pleasure to help blind	29 (31.5)
Donated eyes can give vision to a person	39 (42.4)
Influenced after reading an article	1 (1.1)
Influenced by a lecture	3 (3.2)
<b>Reason for not donating eyes</b>	
Lack of awareness	51 (55.4)
Objection by family members	18 (19.6)
Delay in conducting final rituals	2 (2.2)
Body ill-treated by eye donation	2 (2.2)
Dislike of separating eyes from body	6 (6.5)
Unsuitability to donate eye because of health problems	4 (4.3)
Religious restrictions in separating eyes from the body	9 (9.8)

39 (42.4%) participants mentioned that the reason for donating eyes is it can give vision to a person. Similarly 29 (31.5%) participants mentioned as pleasure to help blind and 20 (21.8%) participants as it is a noble work. Lack of awareness about

eye donation was the major reason for not donating eyes reported by 51(55.4%) participants and objection by family members was reported by 18(19.6%) participants [Table 5].

## DISCUSSION

In the present study, 36.6% of the participants were aware of eye donation. The region-specific factors may influence the knowledge of eye donation in different parts of the world. A study by Priyadarshini *et al.* showed an awareness of 50.6% among the patients attending two outreach clinics in southern India. [5] However, the awareness was only 30.7% in the rural population of India, compared to 73.8% in the urban population of India. [6,7] A study by Tandon *et al.* in Delhi found that 55.4% next of kin were aware of the concept of eye donation. [8] According to a study by Bhandary *et al.* awareness of eye donation was observed in 69% of attendants of patients at various clinics in Melaka, Malaysia. [9]

Although 36.6% of the participants had the awareness about eye donation, the willingness to donate eyes was seen in only 18.7%. This finding of better awareness than willingness to donate eyes is well observed in the study by Yew *et al.* in Singapore (awareness 80.7% and willingness 67%).<sup>10</sup> Similarly in the study by Bhandary *et al.*, where out of the 69% participants who were aware of eye donation, only 34.42% were willing to donate eyes. Willingness was more among the Indian race ( $P = 0.02$ ) and males ( $P = 0.02$ ). [9]

Also, the study by Tandon *et al.* showed that the prior knowledge of eye donation, literacy, and socioeconomic status had no influence on willingness for eye donation and major reasons for not donating eyes included refusal to discuss the issue and dissuasion by distant relatives, legal problems, and religious beliefs. [8]

Educational status showed a positive impact on the awareness of eye donation but did not show any statistically significant effect on the willingness to donate eyes. However, Yew *et al.* have found that the knowledge and willingness is more due to the higher educational status in Singaporeans. [10] Whereas in the study by Bhandary *et al.*, educational status did not influence the willingness to donate eyes. [9]

According to a study by Shahbazian *et al.*, “age, sex, and occupation did not influence the attitudes; however ethnicity, educational level, economic status, and having a loved one in need of an organ significantly increased the willingness for organ donation.” [11] In our study, males were more aware and more willing to donate eyes, opposite to the observations by Krishnaiah *et al.*, and by Bhandary *et al.* in which females were more aware of eye donation. [6,9] Unwillingness among females may be because of their family ties and the necessity to seek permission from the family members before pledging their eyes. The younger age group was more willing to donate eyes and is consistent with an Indian study. [6]

Studies show that there was a poor awareness about the 'fatwa' passed by the Muslim Legislative Council permitting organ donation in 1995. This lack of awareness has led to the fear of doing something against religion by donating organs among the Muslim population. [12,13]

In the present study, 89.4% were aware that eye donation is not against their religion and 94.6% knew that it does not cause any disfigurement of the face. In contrast, other studies have shown a concern among the respondents, like disfigurement of the face of the deceased, fear that it is against their religious belief, and may be time-consuming thus delaying the funeral process. [12]

All the study subjects were promoted for eye donation and were given a pamphlet consisting of the following information:

- 1) Indications and contraindications for eye donation.
- 2) To contact the nearest eye bank and pledge for eye donation.
- 3) The eye bank personnel would give the directions and precautions to be taken.
- 4) The eye bank team can come either to the house or to the hospital where death has taken place.
- 5) The process of removal and transportation of cornea to the eye bank.

#### **Limitations of the study:**

The study participants were those who visited the OPD of a primary health centre so the results of this study cannot be generalized to all the rural population. A population-based house-to-house survey would have been ideal.

#### **CONCLUSION AND RECOMMENDATION**

Although 36.6% participants were aware of eye donation, only 51% of them were willing to donate their eyes. Therefore, there is a great need to have awareness programs to motivate people to donate eyes to help mankind by giving sight to the needy.

Thus, to make the dream of reducing the burden of avoidable corneal blindness, the epidemiologists, the ophthalmologists, general physicians, nongovernmental organizations (NGOs), and especially the religious leaders have to co-operate to educate and motivate the people for eye donation.

#### **ACKNOWLEDGEMENT**

We sincerely acknowledge the study participants for their co-operation during the study. We thank the management of KVG

Medical College, office staff and interns of Department of Community medicine and for their support for this research work.

#### **REFERENCES**

1. WHO. Visual impairment and blindness. [Cited on 2012 May 20]. Available from: <http://www.who.int/mediacentre/factsheets/fs282/en/>
2. Kanwar S. Corneal blindness accounts for 25% of total 1.5 crore blinds in our country. [Cited on 2012 Aug 28]. Available from: [http://articles.timesofindia.indiatimes.com/2012-08-27/chandigarh/33424190\\_1\\_corneal-blindness-donor-eyes-number-of-eye-donations](http://articles.timesofindia.indiatimes.com/2012-08-27/chandigarh/33424190_1_corneal-blindness-donor-eyes-number-of-eye-donations)
3. Natrajan S. Donating eyes, a solution to blindness. [Cited on 2012 Jul 10]. Available from: <http://www.timeswellness.com/index.aspx?page=article&sectid=109&contentid=20120217201202171450495918f318681>
4. Report of National Survey by National Program for the Control of blindness, India and World Health Organization, National Program for the Control of blindness, 1986-89.
5. Priyadarshini B, Srinivasan M, Padmavathi A, Selvam S, Saradha R, Nirmalan PK. Awareness of eye donation in an adult population of Southern India, A pilot study. *Indian J Ophthalmol* 2003;51:101-4.
6. Krishnaiah S, Kovai V, Nutheti R, Shamanna BR, Thomas R, Rao GN. Awareness of eye donation in the rural population of India. *Indian J Ophthalmol* 2004;52:73-8.
7. Dandona R, Dandona L, Naduvilath TJ, McCarty CA, Rao GN. Awareness of eye donation in the urban population in India. *Aust N Z Ophthalmol* 1999;27:166-9.
8. Tandon R, Verma K, Vanathi M, Pandey RM, Vajpayee RB. Factors affecting eye donation from postmortem

- cases in tertiary care hospital. *Cornea* 2004;23:597-601.
9. Bhandary S, Khanna R, Rao KA, Rao LG, Lingam KD, Binu V. Eye donation – Awareness and willingness among attendants of patients at various clinics in Melaka, Malaysia. *Indian J Ophthalmol* 2011;59:41-45.
  10. Yew YW, Saw SM, Pan JC, Shen HM, Lwin M, Yew MS, et al. Knowledge and beliefs on corneal donation in Singapore adults. *Br J Ophthalmol* 2005;89:835-40.
  11. Shahbazian H, Dibaei A, Barfi M. Public attitudes toward cadaveric organ donation: A survey in Ahwaz. *Urol J* 2006;3:234-9.
  12. Randhawa G. An exploratory study examining the influence of religion on attitudes towards organ donation among the Asian population in Luton UK. *Nephrol Dial Transplant* 1998;13:1949-54.
  13. Alam AA. Public opinion on organ donation in Saudi Arabia. *Saudi J Kidney Dis Transpl* 2007; 18:54-9.

How to cite this article: Amruth M, Kulkarni AG, Kamble SV et. al. Awareness and perception regarding eye donation among adult patients and their attendants in a primary health centre, south india. *Int J Health Sci Res.* 2014;4(9):1-8.

\*\*\*\*\*

**International Journal of Health Sciences & Research (IJHSR)**

**Publish your work in this journal**

The International Journal of Health Sciences & Research is a multidisciplinary indexed open access double-blind peer-reviewed international journal that publishes original research articles from all areas of health sciences and allied branches. This monthly journal is characterised by rapid publication of reviews, original research and case reports across all the fields of health sciences. The details of journal are available on its official website ([www.ijhsr.org](http://www.ijhsr.org)).

Submit your manuscript by email: [editor.ijhsr@gmail.com](mailto:editor.ijhsr@gmail.com) OR [editor.ijhsr@yahoo.com](mailto:editor.ijhsr@yahoo.com)