

## ORIGINAL ARTICLE

### DONATING AN EYE: ITS AWARENESS AND PERCEPTION AMONG STUDENTS OF DENTAL COLLEGES IN TRICITY AND ITS ADJOINING AREAS, INDIA

Sonal Bhatia<sup>1</sup>, Nidhi Gupta<sup>2</sup>

<sup>1</sup>MDS Final year Student, <sup>2</sup>Professor and Head, Public Health Dentistry, Swami Devi Dyal Hospital and Dental College, Panchkula, Haryana, India


#### 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 the actual requirement in India. This is largely due to the inadequate number of corneas collected. Well-informed nursing students could be expected to influence eye donation rates. **Aims:** To assess the awareness and perception of 475 BDS and MDS dentists towards eye donation in Tricity and its adjoining areas, India. **Settings and Design:** Cross-sectional study design. **Materials and Methods:** A pretested, semi-structured questionnaire. **Statistical Analysis Used:** Data was entered and analyzed on Statistical Packages for the Social Sciences (SPSS), software version 16.0; Inc., Chicago, IL, USA. **Results:** Majority of the dental students 320 (67.3%) were not even aware of any contact place for eye donation. Most of the study subjects 353 (74.2%) knew that there's an eye shortage in India and the ideal time for donating eyes is within 6 hours after death 306 (64.4%). However, majority of the study subjects 274 (57.7%) agree that donated eyes can be used for corneal grafting but still many of them 217 (45.6%) disagree that eyes can be donated after death. **Conclusion:** This study revealed that dental students were well aware of eye donations and most of them were inclined to sign-up for eye donation. The perceived reasons for not donating eyes need to be considered while creating awareness about eye donation in the community. The dental students could be actively involved as volunteers in eye donation campaigns and they can act as counselors for eye donors. They can also contribute by participating in creating awareness and motivating people to become eye donors.

**Key words:** dental students, corneal diseases, blindness, eye donation

Corresponding Author: Sonal Bhatia, MDS Final year Student, Public Health Dentistry, Swami Devi Dyal Hospital and Dental College, Panchkula, Haryana, India

This article may be cited as: Bhatia S, Gupta N. Donating an eye: Its awareness and perception among students of dental colleges in tricity and its adjoining areas, India. J Adv Med Dent Scie Res 2017;5(1):39-45.

Access this article online	
<b>Quick Response Code</b> 	Website: <a href="http://www.jamdsr.com">www.jamdsr.com</a>
	DOI: 10.21276/jamdsr.2017.5.1.8

## INTRODUCTION

*“Let your eyes change someone’s life”*

Ever wondered how life would be for the blind?? A word of unrelenting darkness!! Lucky are those who have the gift of vision but not everyone is equally fortunate. Our sense of vision is the most important of all the senses because it allows us freely to interact with the environment and enjoying the beauty of life. Our eye is a sensitive, highly specialized sense organ subject to various disorders many of which leads to impaired vision.<sup>3</sup>

Blindness is a lack or loss of ability to see; lack of perception of visual stimuli. Infact, it is a serious public health problem worldwide. The risk of blindness increases significantly with poverty and older age and most commonly in women. In India, blindness and vision impairment has been one of the major problem. However,

overall blindness accounts for about 82% worldwide and is found to be in the people aged 50 years or older. The disease of the cornea is one of the major causes of blindness.

The world health organization (WHO) estimates that for every 5 seconds, someone goes blind. Globally, 37 million people are blind and of these nearly 10 lakh blind people are willing for corneal transplantation.<sup>4</sup>

According to the eye bank association of India, the current cornea procurement rate in India is 22,000 per year. It is estimated that a significant proportion of donor corneas are unsuitable for corneal transplantation. Based upon our current ratio of available safe donor eyes, we would need 277,000 donor eyes to perform 100,000 corneal transplants in a year in India. Infact, there is approximately a 20-fold increase from the donor eyes available now. A shortage of

transplantable corneas is common and has been the subject of attention.

Therefore, to increase procurement of corneas, raising the level of public education on eye donation is an important first step. It is an act of charity, purely for the benefit of society and is totally voluntary.<sup>12</sup>

Public health prevention programs are the most cost effective means of decreasing the global burden of corneal blindness. Dental students are no doubt the future health care providers for the community. They are from different educational backgrounds with a scientific base and have an inherent inclination to serve mankind. Therefore, a study has been conducted in order to assess the awareness and perception regarding eye donation among students of dental colleges in Tricity and its adjoining areas, India.

## **MATERIALS AND METHOD**

### **Study design and population**

This study was conducted to ascertain the awareness and perception regarding eye donation amongst dental students in Tricity and its adjoining areas (Chandigarh, Mohali and Panchkula), India in the month of November and December 2015. BDS and MDS dentists were approached to take part in the study. The protocol of the study was approved by the Ethical and Review Board of Swami Devi Dyal Hospital and Dental College, Panchkula district, Haryana. The study has been conducted in full accordance with the World Medical Association Declaration of Helsinki.

The sample size was calculated based on the assumption that 75% of the dental students may have sufficient awareness regarding eye donation and its procedure. Precision was set at 4%.<sup>14</sup> For p value 0.05% and 80% power of the study, our expected sample size was 468 dentists. Therefore, a sample of 475 dentists was recruited for the study.

List of all dental practitioners located in Tricity and its adjoining areas was obtained from their respective state Dental Council website. From the list, dentists were randomly selected in order to participate in the study. From those selected dentists, approximately equal number were included, 156 from Panchkula, 142 from Chandigarh and 177 dentists were from Mohali participated in the study i.e. probability proportionate sampling. Written Informed Consent was obtained from all the study subjects after explaining them the aim and objectives of the study.

A self structured, closed ended questionnaire was designed to obtain students awareness and perception regarding eye donation and was distributed among all the subjects which took approximately 5 minutes to complete. The questionnaire was pretested, revised and retested before use.

Prior to the study, a pilot study was performed on 40 dentists in order to determine test-retest reliability of the survey questionnaire. The respondents were asked for feedback on the clarity of the questionnaire and whether

there were any difficulty in answering the questions or ambiguity to what sort of answer was required. Few modifications were made based on the response given by the study subjects to improve the understanding of the questionnaire. To maintain anonymous design all performas were coded to avoid identification of the sample by the investigator. Those who were either unable to provide the required information or submitted incomplete questionnaire form were excluded. The initial sample consisted of 523 dentists but after applying exclusion criteria the final sample comprised of 475 dentists. A total of 475 dentists filled out the questionnaire, 367 dentists were BDS and 108 were MDS. Participation in the study was voluntary.

The participants of the pilot study were not included in the final analysis. Cronbach's alpha of the questionnaire was found to be acceptable (0.82). Content validity was obtained based on the opinions expressed by a panel of five experts from the department of public health dentistry. Face validity was also assessed and it was observed that most of the participants found the questionnaire to be easy. Final questionnaire was divided into three sections and a statement. Section A comprised of demographic information such as age, gender, year of study of the study subjects was included. Section B comprised of 10 questions in order to know the awareness regarding eye donation among dental students with dichotomous response i.e. yes or no. However, Section C included four statements in order to determine the perception about eye donation among dental students recorded on a 5-point likert scale ranging from strongly agree to strongly disagree. Questionnaire were distributed in the classes of the respective years after a scheduled lecture. Statement A composed of 12 sentences which were basically divided into two parts. First four were asked from the study subjects who really wanted to donate their eye after their death and believed that eye donation is a good cause. Whereas, next eight questions were asked from those study subjects who did not wanted to donate their eye after their death in order to know the reason about it.

Data was entered and analyzed on Statistical Packages for the Social Sciences (SPSS), software version 16.0; Inc., Chicago, IL, USA. All qualitative variables were described through frequencies and percentages and all quantitative variables were illustrated through tests to be applied.

## **RESULTS**

The present study was conducted among 475 dentists with the female predominance of 272 (57.3%). Majority of the subjects 367 (77.3%) were BDS between the age group 21-25 years. (Table 1) Table 2 describes the responses of the questionnaire given by the study subjects with the most of the dental students 324(68.2%) do not have any known (friend/relative) who has donated and received eye after death 279 (58.8%). Majority of the dentists 320 (67.3%) were not even aware of any contact place for eye donation.

However, most of the dentists 315 (66.3%) neither have attended any kind of seminar or lecture regarding eye donation nor they were influenced by any lecture 291 (61.2%), but still they were aware about the official registration procedure regarding eye donation 285(60%). Although very few of the dental students 135 (28.4%) have registered themselves for eye donation after death.

**Table 3** represents the different source of information regarding eye donation by study subjects. Audio-visual aids including ‘television’ and ‘media’ were the main sources from which majority of the study subjects gathered 38.5% information followed by ‘lectures/seminars’ 33.7% and ‘family/relatives’ 16.4%.

**Table 4** represents the responses of the study subjects regarding eye donation whether they wish to donate their eyes or not. Most of the study subjects 353 (74.2%)knew that there’s an eye shortage in India and the ideal time for donating eyes is within 6 hours after death 306 (64.4%). However, majority of the study subjects 274 (57.7%) agree that donated eyes can be used for corneal grafting but still many of them 217 (45.6%) disagree that eyes can be donated after death.

**Graph 1 and 2** depicts the responses given by the study subjects when they were asked whether they wish to donate their eyes. Most of them 303 (63.9%) agreed that donating

eyes is a noble work followed by the reason that there is non availability of donors 297 (62.5%). In India, most of the study subjects 284 (59.7%) believed that it gives them satisfaction to help the blind people. Some of the study subjects 294 (61.8%) were inspired by family/friends who already had received or donated eye, therefore, it gives them inner pleasure by making others world beautiful. On the other hand, there were very few study subjects 102 (21.3%) who wish to donate their eyes just for monetary benefits or were influenced by social media or academic education 199 (41.8%).

**Graph 2** represents the different reasons for which most of the study subjects did not wish to donate their eyes. Objection by family members 294 (61.9%) and religious restrictions 339 (71.4%) were the major reasons. The other reasons may be dislike of separating eyes from their body 272 (57.1%) and lack of awareness 235 (49.5%) about eye donation were also quite enhancing reasons responded by study subjects for not willing to donate their eyes. However, some of the study subjects feels that registering for eye donation is like signing death certificate 267 (56.1%) for them, therefore, they were not willing to donate their eyes. Age and health problems 86 (18%) were the least reasons given by the study subjects for not donating their eyes.

**Table 1** Demographic details of the study subjects

	n(%)
<b>Gender</b>	
Males	203(42.7)
Females	272(57.3)
<b>Age</b>	
21-25	353(74.3)
26-30	36(7.6)
31-35	38(8.0)
36-40	36(7.6)
>40	12(2.5)
<b>Qualification</b>	
BDS	367(77.3)
MDS	108(22.7)
<b>Total</b>	<b>475</b>

**Table 2** Responses of the Questions Regarding Eye Donation

Questions	Responses given by the subjects (%)	
	YES	NO
Do you know any person(friend/relative) who has donated eye after their death?	151(31.8)	324(68.2)
Do you know someone(friend/relative) who has received a donated eye?	196(41.2)	279(58.8)
Do you know any contact place for eye donation?	155(32.7)	320(67.3)
Are you thinking to take a pledge for donating your eyes after death?	256(53.9)	219(46.1)
Do you have awareness about selling and buying of donated eyes?	187(39.3)	288(60.7)
Will you agree to sell donated eyes?	317(66.8)	158(33.2)
Have you ever attended any kind of seminar or lecture regarding eye donation?	160(33.7)	315(66.3)
Are you aware for the registration of eye donation officially and its procedure for registration?	285(60)	190(40)
Have you registered yourself for eye donation after death?	135(28.4)	340(71.6)

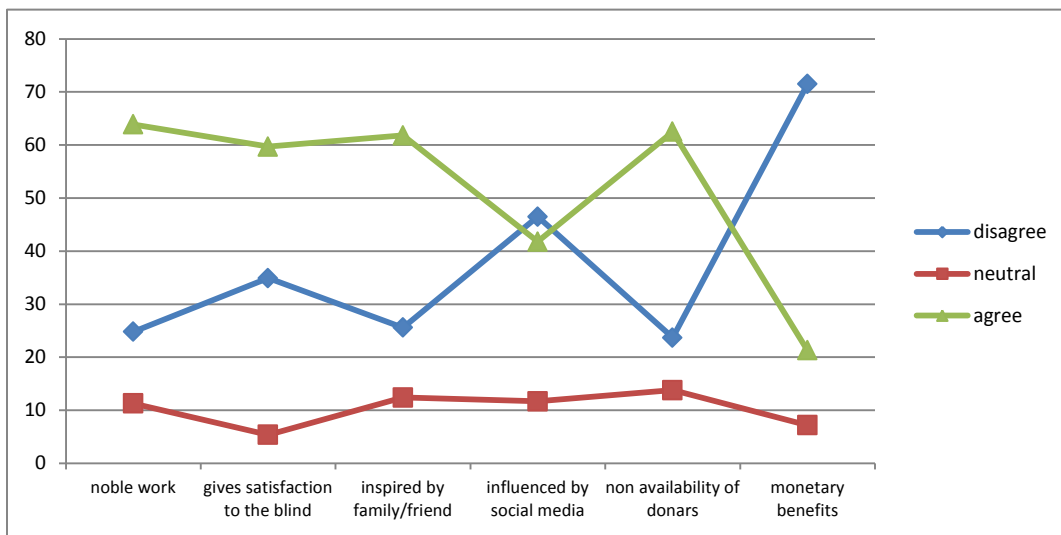
**Table 3** Source of information on eye donation (n=475)

Source of information	%
Audiovisual aids	38.5
From lectures/seminars	33.7
Friends	11.5
Family/ relatives	16.4

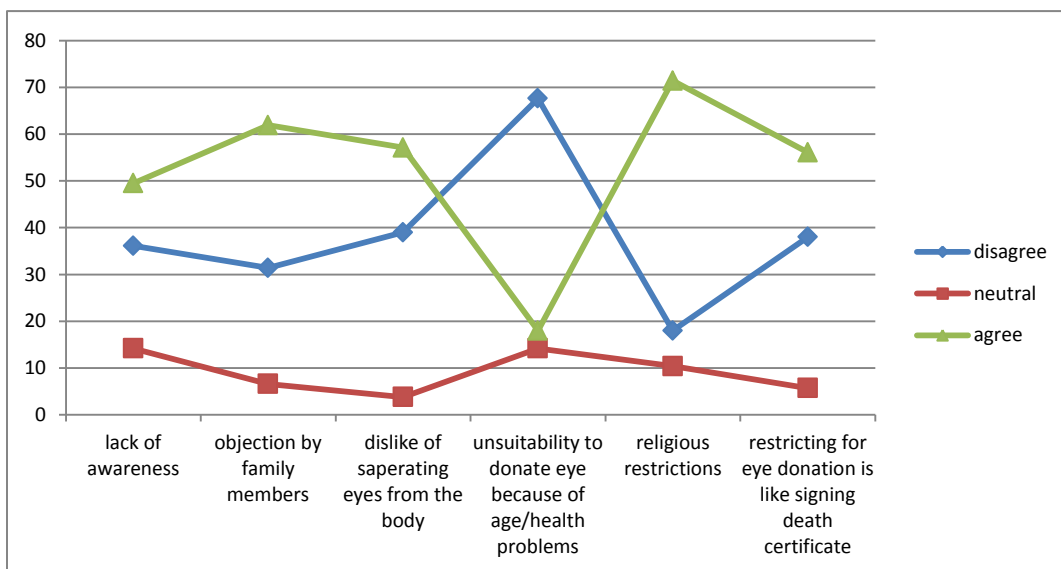
**Table 4: Questionnaire**

Questions	D	N	A
Eyes can be donated after death	45.6	8.4	43.2
Donated eyes can be used for corneal grafting	57.7	5.9	45.3
Ideal time for donating eyes is within 6 hours after death	28.9	6.7	64.4
There is an eye shortage in india	19.9	5.8	74.3

**Graph 1: I wish to donate eyes**



**Graph 2: I do not wish to donate eyes**



## DISCUSSION

India has become the world's largest number of blind people<sup>1</sup>. Statistics on eye donation here paint a rather dark picture for persons blind from corneal diseases<sup>15</sup>. Of the 37 million people across the globe who are blind, over 15 million are from India. Although the large proportion of corneal blindness adds to the social and economic burden every year, eye banking in India is at a nascent stage. However, 75% of the cases are avoidable blindness, this could be due to the country's acute shortage of transplant surgeons and donated eyes for the treatment of corneal blindness. While India needs 2.5 lakhs donated eyes every year, the country's 109 eye banks manage to collect a maximum of just 25000 eyes, 30% of which can't be used.<sup>1</sup> Corneal transplantation is the most successful among all organ transplant procedures. However, throughout the developing world there is a shortage of corneas. Therefore, in order to increase eye donation it is essential to enhance awareness among potential donors and dispel their misconceptions. Also, Dental professionals' perception towards eye donation can be expected to influence donation rates<sup>15</sup>. As far as dental professionals are concerned, there is limited information about the awareness and perception regarding eye donation among them. Therefore, this study is conducted in order to evaluate the awareness and perception regarding eye donation among dental professions in Tricity, India.

In the present study, majority of the study subjects are aware about the official registration procedure of the eye donation 285(60%) but of course are not aware about its selling or buying procedure 288 (60.7%). Most of the study subjects are planning to register themselves for eye donation 340 (71.6%) and not have registered yet but are not aware about any contact place for eye donation 320 (67.3%). As many of the study subjects are aware about the eye shortage in India 353(74.3%), therefore, they are thinking to take pledge for donating their eyes after death 256(53.9%) but there are very few study subjects who are influenced by any friend 324(68.2%) or family member 279(58.8%) who has received or donated eye or any lecture/ seminar 291(61.2%) and not even many of them have attended either 315(66.3%). In fact, television 183(38.5%) and lectures/seminars 160(33.7%) are the two major sources to spread information regarding eye donation when asked from the study subjects. Most of the subjects were not aware whom to contact, when to contact, place of eye donation and the time limit for eye donation.

However, majority of the study subjects are willing to donate their eyes 370 (77.8%), donating eyes is like a noble work (63.9%) and there is non availability of the donors (62.5%) are the two major reasons given by the study subjects for which they are willing to donate their eyes followed by the reasons that they are influenced by family/ friend (61.8%) or mass media (41.8%). Nobility in the act of eye donation was the main motivational force for eye donation as per responses given by dental professions in

the present study<sup>8</sup>. Some believe that donating eyes gives satisfaction and pleasure to them after becoming others world beautiful (59.7%). Few subjects were of the opinion that, the donor's family should get monetary benefit (21.3%). In comparison to other region-specific factors may influence the willingness to donate in different parts of the world because the willingness to donate was high in medical students in India<sup>14</sup>, nursing students in Bangalore<sup>15</sup>, health professionals in India<sup>16</sup>, adults in Singapore<sup>17</sup>, university students and general population in Malaysia.<sup>18-19</sup> In fact, in United Kingdom, only 10% of the people on the national organ donor register are unwilling to donate their cornea<sup>20</sup>.

Although, there are very few who are not willing to donate their eyes 105(22.1%), religious restrictions (71.4%) and the objection by the family members (61.9%) are the two major reasons showed by the study subjects who were not willing to donate their eyes followed by dislike of separating their eyes from the body (57.1%). It may be a reflection of the low knowledge on eye donation, the procurement process, cultural and religious beliefs. Therefore, it will be quite important that a more in depth teaching on eye donation and awareness camps should be arranged. Another important reason could be the influence of immediate extended family making key decisions in a family which has always been part of the culture. However, some believe that registering them for eye donation is like signing their death certificate (56.1%). This is quite surprising because fewer proportions of the dental professionals were willing to donate their eyes but it could reflect their aversion to family interference with decisions taken while alive. Individual opinion about eye donation is reported to be affected by age, religion, culture and beliefs concerning death and mortality.<sup>21-22</sup> Lack of awareness (49.5%) is also the one of the reason given by many of the study subjects for not willing to donate their eyes. 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<sup>23</sup>. Very few of them are not willing to donate their eyes because of their age/ health related problems (18.2%). In United Kingdom, the median age of eye only donors was 70-80 years while in United States it is 40-50 years. Thus, the age of the donor contributes to the quality and usability of the cornea<sup>20</sup>. This is similar to the study among medical students in Delhi<sup>14</sup>. In other studies amongst UK nurses the main reason for refusal to donate specific tissues such as the eye, skin and bone with preference to other organs amongst UK nurses, donation coordinators and hospital health staff was the perceived impact on disfigurement postmortem which was not the same reason in our study<sup>26-28</sup>.

A study done in Singapore<sup>17</sup> but different from studies done in Toronto<sup>25</sup> and India.<sup>19</sup> In Toronto, the main reason for donating was because of experiences with corneal donation and transplantation while in India, it was believed

to be a way to live on after death. This shows the impact of culture/religion and interaction with donor recipients on willingness to donate.

Therefore, there is a great need to educate masses, as they are an important part of our society. If they are educated about the preventive and curative aspects of corneal blindness, they can spread the message among their friends and family members, thus acting as important motivators. It is also essential to remove their misconception regarding eye donation. Therefore, 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 donation 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<sup>29</sup>

#### LIMITATIONS OF THE STUDY

The limitations of the present study is that the anonymous questionnaire lead to social desirability bias.

No international standardized questionnaire on eye donation was available which leads to unpredictable results. However, majority of the participants were not aware of eye donation, but only few of them were willing to donate their eyes, therefore, awareness camp regarding eye donation should be conducted in order to help the mankind.

#### CONCLUSION AND RECOMMENDATIONS

Students are the future of every society, as well as potential messenger to transmit different information. Although most of the students are in favor of active involvement to transmit knowledge, but lack of awareness is the main hindrance. The present study revealed that most of the dental students were well aware of eye donation and most of them were inclined to pledge for eye donation. The perceived reasons for not donating eyes need to be considered while creating awareness about eye donation in the community. The study recommends for curriculum changes to educate the dental students about the eye donation. To conduct Regular Health awareness camp in schools and colleges regarding eye donation. To bring in legal reforms, strategies that have worked well in other parts of the world may be useful here too. For example in USA the presumed consent law was introduced in 1975. This concept has legal sanction, where if the dead person has not registered any objection to donate while alive, consent is presumed and eye can be removed as required. The government should introduce the concept of “presumed Consent” to boost eye donation. Dental students are the future health care providers for the community and

they could be actively involved as volunteers in eye donation campaigns, wherein after proper training in counseling techniques, they can act as counselors for eye donors. They can also contribute by participating in creating awareness and motivate the people for eye donation during their postings in urban as well as rural community and help to achieve “Vision 2020: The Right to Sight”.

#### Acknowledgements

We thank all the dental students who participated in the study

#### REFERENCES

1. Aggarwal et al. An insight into awareness about eye donation among dental students of tertiary dental care institution. *EJPMR*. 2016;3(3):321-26.
2. Richard L. Eye donation, the gift of sight. *Nightingale Nursing Times*. 2009;5(4):24-5.
3. Chacko HM, Methew J, Jose J, Dominic J, Sachina BT and Babu D. Knowledge and attitude regarding eye donation among the adolescents : a co-relational study. *NUJHS*, 2014; 4(1):66-71.
4. Mohan RK. Eye donation. Available at <http://www.Mohanfoundation.Org>. Last accessed on 13 March 2015.
5. Mohan M. National survey of blindness-India. NPCB-WHO report. New Delhi: Ministry of health and family welfare, Government of India, 1989.
6. Abadom E.G, Otene C.I and Enivwenae A.O. Knowledge and willingness to donate eye among medical doctors in delta state. *IOSR J Dent and Med Sciences*. 2014;13(6):57-63
7. Singh M, Bhardwaj A, Ahluwalia S K, Saini S and Qadri S. Eye Donation: Perception and promoting factors among medical students. *Ind J Comm Health*. 2012;24(3):175-178
8. Gupta A, Jain S, Jain T and Gupta K. Awareness and perception regarding eye donation in students of a nursing college in Bangalore. *Ind J Comm Med*. 2009; 34(2):122-125
9. <http://www.npcb.nic.in/sitemap.asp.html> last accessed on 22may2015
10. <http://www.nhp.gov.in/national-eye-donation-fortnight-2014> last accessed on 22may2015
11. Kumar M P and Naik B S. To assess the knowledge of the undergraduate medical students regarding eye donation. *Int J Res Health Sci*. 2013;1(3):235-238
12. Srivastava S K, Kulthe S B and Gore H D. Awareness of eye donation and willingness to donate eyes in population attending outdoor patients department of ophthalmology at Sknmc, pune (Maharashtra). *Ind J Applied Res*. 2015;5(1):451-453
13. Raj et al. Short term impact of oral hygiene training package to anganwadi workers on improving oral hygiene of preschool children in North Indian City. *BMC Oral Health*. 2013;13:67.
14. Sign MM, Rahi M, Pagare D, Ingle GK. Medical students perception on eye donation in Delhi. *India J Ophthalmol*. 2007;55:49-52.
15. Dhaliwal U. Enhancing Eye donation rates. Training students to be motivators. *Indian J Ophthalmol*. 2002;50:209-12.
16. Dandona R, Dandona L, Naduvilath TJ, McCarty CA and Rao GN. Awareness of eye donation in the urban population in India. *Aust N Z J Ophthalmol*. 1999;27:166-9.

17. Yew YW, Saw SM, Pan JCH, Shen HM, Lwin M, Yew MS and Heng WJ. Knowledge and beliefs on corneal donation in Singapore adults. *Br J Ophthalmol.* 2005;89:835-40.
18. Bharti MK, Reddy RC, Tajunisah I and Ali NAM. Awareness and knowledge on eye donation among university students. *Med J Malaysia.* 2009;64(64):41-45
19. Bhandary S, Khanna R, Rao AK, Rao LG, Lingam KD and Binu V. Eye donation- Awareness and willingness amongst attendants of patients at various clinics in Melaka, Malaysia. *Indian J Ophthalmol.* 2011;59:41-5.
20. Gaum L et al. Tissue and corneal donation and transplantation in the UK. *Br J. Anaesth.* 2012;108(suppl 1):143-47.
21. Golchet G et al. Why don't we have enough cornea donors ? A literature review and survey. *Optometry.* 2000;71(5):318-28.
22. Krieglstein TR et al. Factors influencing consent (in german). *Ophthalmologie.* 2000;98(6):545-49.
23. Lawlor M et al. Specific Unwillingness to donate eyes: the impact of disfigurement, knowledge and procurement on corneal donation. *American Journal of Transplantation.* 2010; 10:657-63
24. Kokab S et al. Eye donation awareness among paramedical staff of different hospitals in Raichur district: A Survey. *J Evolv Med and Dent Scienc.* 2013;2(19):3249-56.
25. Gogate B et al. Eye donation program through faith leaders. *Br J Ophthalmol.* 2008;92:867-8.
26. Kent B and Owens RG. Conflicting attitudes to corneal and organ donation. A study of nurse's attitudes to organ donation. *Int J Nurs Stud.* 1995;32:484-92.
27. Verble M and Worth J. Biasas among hospital personnel concerning donation of specific organs and tissues. Implications for the donation discussion and education. *J Transpl Coord.* 1997;7:72-77.
28. Verble M and Worth J. Reservations and preferences among procurement professionals concerning the donation of specific organs and tissues. *J Transpl Coord.* 1997;7:111-115.
29. Amruth M, Kulkarni AG and 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.

**Source of support:** Nil

**Conflict of interest:** None declared

This work is licensed under CC BY: *Creative Commons Attribution 3.0 License.*