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# Knowledge, Attitude and Opinion Regarding Eye Donation Among Postgraduate Doctors In Tamil Nadu; A Cross-Sectional Study

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## ABSTRACT

**Introduction:** Corneal diseases are a major contributing factor to visual impairment and treatable blindness on a global scale, with prevalence in developing nations such as India. Corneal opacity is the major cause of blindness among population aged below 49 years. Corneal transplantation stands as the primary treatment option for individuals afflicted with corneal blindness resulting from various corneal diseases. It is therefore imperative to promote eye donation among individuals. Improving the knowledge and attitude regarding eye donation amongst future primary care givers is one of the most efficient ways to promote eye donation and eliminate any existing taboos.

**Methodology**: This is a cross-sectional study with its target population as postgraduate doctors in the state of Tamil Nadu. A total of 304 participants took part in the study and the required data was collected and analysed with Excel and SPSS v.26.

**Results**: The mean score of knowledge regarding eye donation among the participants was 57.27 (Good). The attitude towards eye donation among ~30% of the participants though was found to be negative. The mean knowledge score was significantly higher among ophthalmology postgraduates by a mean difference of 13.3 (p-value < .001) indicating capacity for excellent improvement with right measures. There was a positive association of high significance between knowing someone personally who has pledged their eyes and willing/ already opted to donate eyes. It was also revealed that the postgraduate doctors preferred awareness programs by medical personnel for efficiently creating more awareness than mass media approach.

**Conclusion:** Our research indicates that there is some negative attitude among the participants despite having good knowledge, which is evident for the possibility of improving their attitudes with minimal efforts. Family members approval seems to be one of the leading causes for the hesitancy towards eye donation. Religious reasons seem to one of the major reasons for hesitancy even amongst medical professionals at present age. Systematic awareness programmes by ophthalmologists for medical personnel of other departments could play a vital role in improving the knowledge and attitude towards eye donation

**Keywords:** *Eye donation; Attitude; Knowledge; South India; Postgraduates*

## 1. INTRODUCTION

Corneal diseases significantly contribute to vision loss and preventable blindness worldwide, especially in developing countries like India. Various infectious and inflammatory eye conditions cause corneal scarring, leading to functional blindness and raising public health concerns. Factors such as limited healthcare access, poor sanitation, and economic inequality worsen the impact of these diseases on vulnerable groups. To reduce the prevalence of corneal blindness, it is

essential to focus on prevention, early detection, and prompt treatment. (1).

The National Blindness and Visual Impairment Survey conducted in India has revealed a significant finding regarding the prevalence of blindness among individuals under the age of 50. The report unequivocally identifies corneal opacity as the primary causative factor (37.5%) leading to blindness in this demographic cohort. This data underscores the critical importance of addressing corneal health issues in younger populations to mitigate the risk of vision impairment and blindness. Likewise, for individuals aged 50 and above, corneal opacity (8.2%) ranks second only to cataracts as the primary cause of vision loss (2).

A corneal transplant is often recommended for various eye conditions. Fuchs' endothelial dystrophy is the most common reason for partial-thickness transplants,(3) especially Descemet's membrane endothelial keratoplasty (DMEK).(4) Bullous keratopathy, including pseudophakic and aphakic forms, frequently requires full-thickness or partial-thickness procedures.(4,5)

Corneal scarring, caused by infections or trauma, is a major issue in Asia. Furthermore, keratoconus is prevalent in younger patients and remains a leading reason for transplants in Europe, Africa, the Middle East, Australia, New Zealand, and Central/South America. (6) Graft failure is the primary reason for repeat transplants,(4) with cases rising as more surgeries are performed. Infectious keratitis, common in developing nations, may result in scarring that necessitates transplantation. (7)

Increasing the number of donors and ensuring timely interventions are essential to address this issue. Medical professionals are key in promoting eye donation. They lead campaigns to raise public awareness and answer questions about the process. Their outreach efforts encourage more people to register as eye donors, which is crucial for reducing the burden of corneal blindness in the region. (8)

Many healthcare professionals show moderate to high willingness to pledge their eyes for donation. Older individuals are generally more inclined to pledge, and as are those exposed to eye banking services during their education. (9,10) Motivating factors often include the desire to help blind individuals and viewing donation as a noble act.(11) However, barriers persist, such as limited knowledge, family objections, concerns about body preservation, and ethical worries related to the extraction process. Educating communities and addressing these barriers could improve donation rates.(12)

Primary sources of information for eye donation education include textbooks, medical training, media, and healthcare professionals like ophthalmologists. These sources can shape understanding but often lack practical insights into eye donation and banking procedures.(10,13) Research gaps persist, especially concerning hesitancy and its reasons among medical professionals. Addressing these gaps requires Medical schools incorporating comprehensive modules on organ donation into their curricula and offering more workshops and continuing medical education programs specifically addressing misconceptions about eye donation, such as concerns about disfigurement or religious objections (10,12)

Postgraduates can play a key role in promoting eye donation through educational initiatives and public campaigns. However, biases and stigmas about eye donation persist, even among medical professionals. There is a need to evaluate doctors' knowledge and attitudes towards eye donation. Identifying the reasons behind negative views and finding ways to enhance understanding is crucial. This will help gain support from medical practitioners for eye donation and broader organ donation efforts. The study focuses on assessing postgraduate doctors' knowledge and their perspectives on eye donation. Understanding these factors can help encourage doctors to advocate for eye donation more effectively.

## 2. METHODOLOGY

This is a cross-sectional study with a duration of three months (March - May 2024) and its target population as postgraduate doctors practising in the state of Tamil Nadu, India.

Inclusion Criteria:

- Individuals with a minimum qualification of MBBS and are currently undergoing any specialisation under D.N.B., M.D., or M.S., postgraduate education.

Exclusion Criteria:

- Personal choice of not willing to participate or provide consent was the only condition for not including in the study.

Based on the inclusion criteria the participants will be selected by purposive sampling and snowball sampling technique. The data was collected directly from the MD / MS pursuing medical professionals regarding their knowledge and attitude through online question forms which would be accessible after viewing the participant information sheet and consenting to the study. The questionnaire was validated with a pilot study and the score grading was also formulated from the same. Above 70 – Excellent; 60 - 69 - Very Good; 50 - 59 – Good; 40 - 49 – Fair; 30 - 39 – Average; Below 29 – Poor (for medical graduates)

as the mean score secured by the non-medical people for the same was 27.7 with the same questionnaire conducted along with pilot study. The study was initiated after obtaining the necessary approvals from the Institution and its Ethical committee. Confidentiality was maintained throughout the study and no names were collected through the questionnaire.

***Statistical Analysis***

The collected data was arranged in Microsoft Excel (Office 16) and then coded and analyzed using SPSS v.26. The descriptives were tabulated and the mean knowledge score comparison between the demographics and other variables like opinion and familiarity were done using the following parametric tests, Independent T test and ANOVA (The score data had normal distribution, verified by measuring skewness and kurtosis).

## 3. RESULTS

**Table 1: The Sociodemographics of the participants (n = 304)**

| Groups | Sub-groups | Frequency | Percentage |
|---|---|---|---|
| **Age** | Below 25 | 157 | 51.6% |
| | 25 - 30 | 100 | 32.9% |
| | Above 30 | 47 | 15.5% |
| **Gender** | Male | 151 | 49.7% |
| | Female | 153 | 50.3% |
| **Department** | Clinical | 129 | 42.4% |
| | Surgical | 132 | 43.4% |
| | Para & Pre-clinical | 43 | 14.1% |
| **MS Ophthalmology** | No | 263 | 86.5% |
| | Yes | 41 | 13.5% |

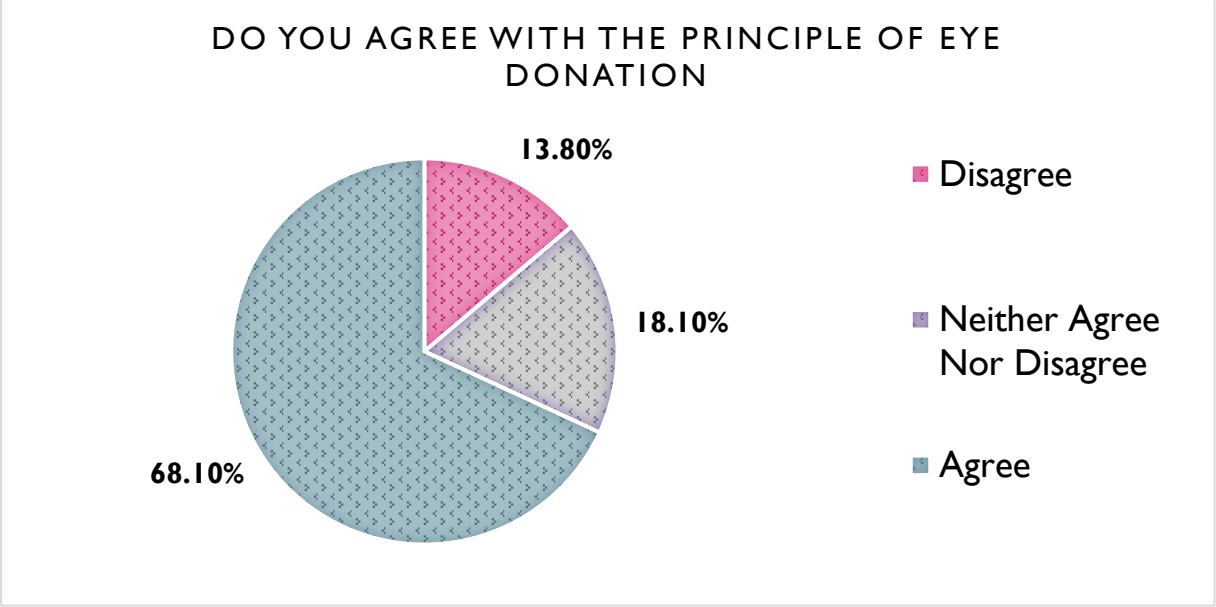



**Figure 1: Attitude regarding the principle of eye donation among the participants**

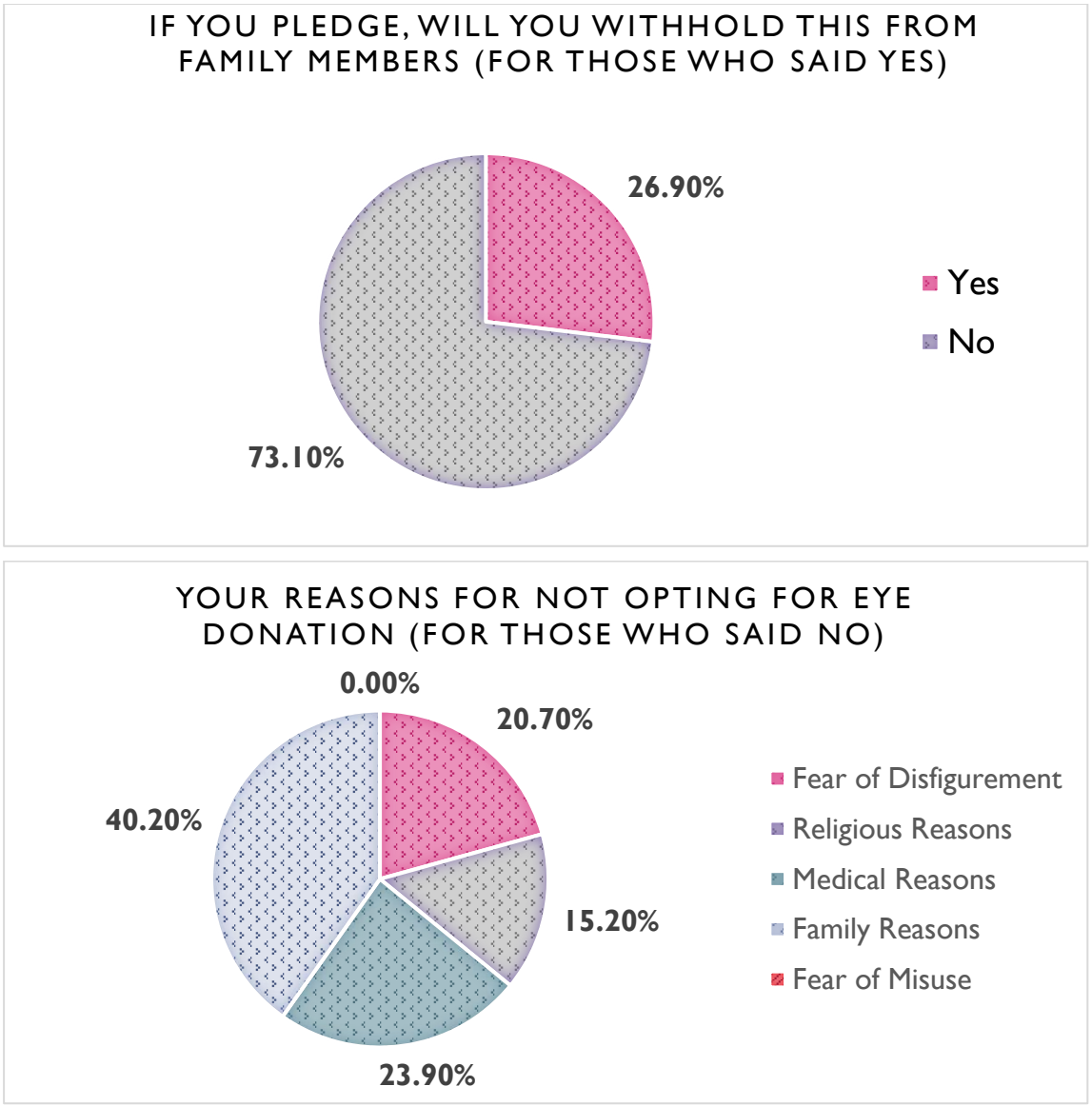
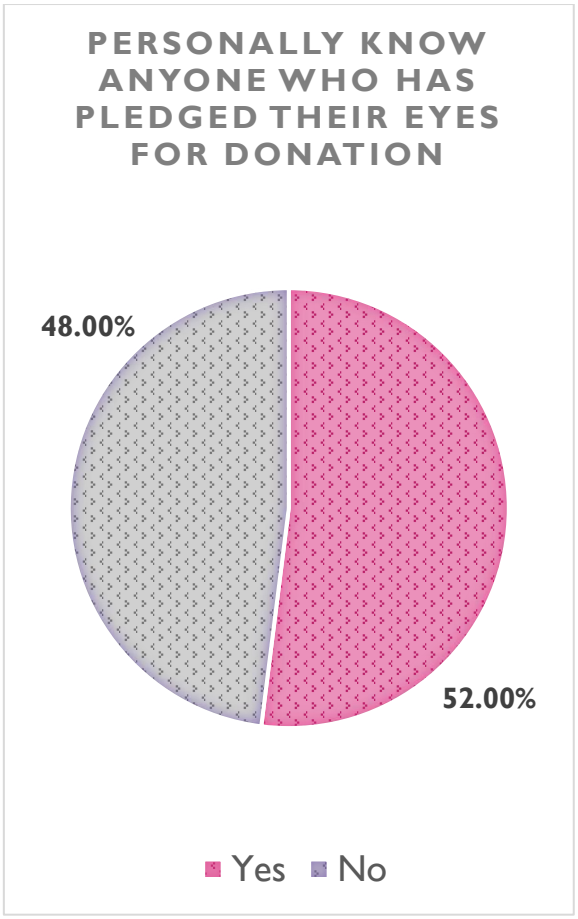



**Figure 2: Attitude regarding pledging the eyes for donation**



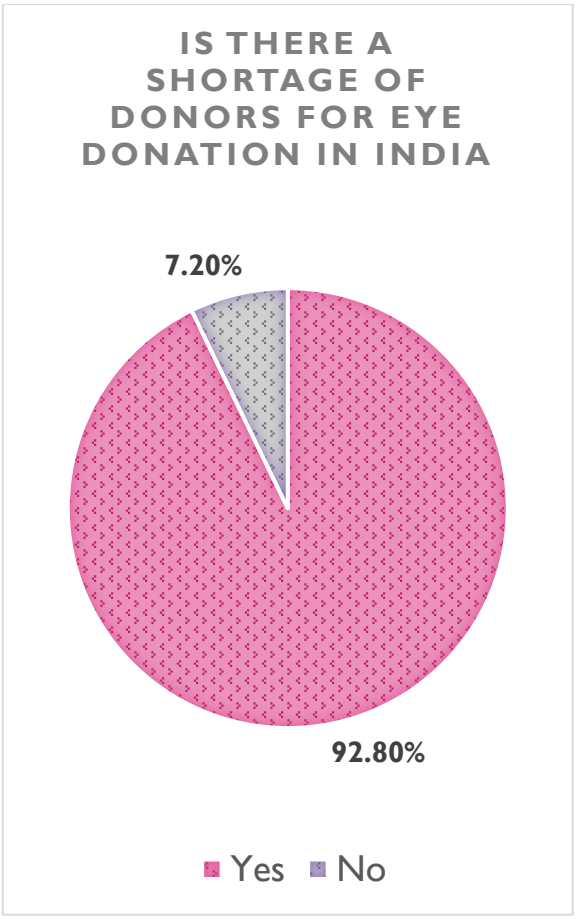




**Figure 3: Personal knowledge of any eye donor Figure 4: Opinion on shortage of donors**

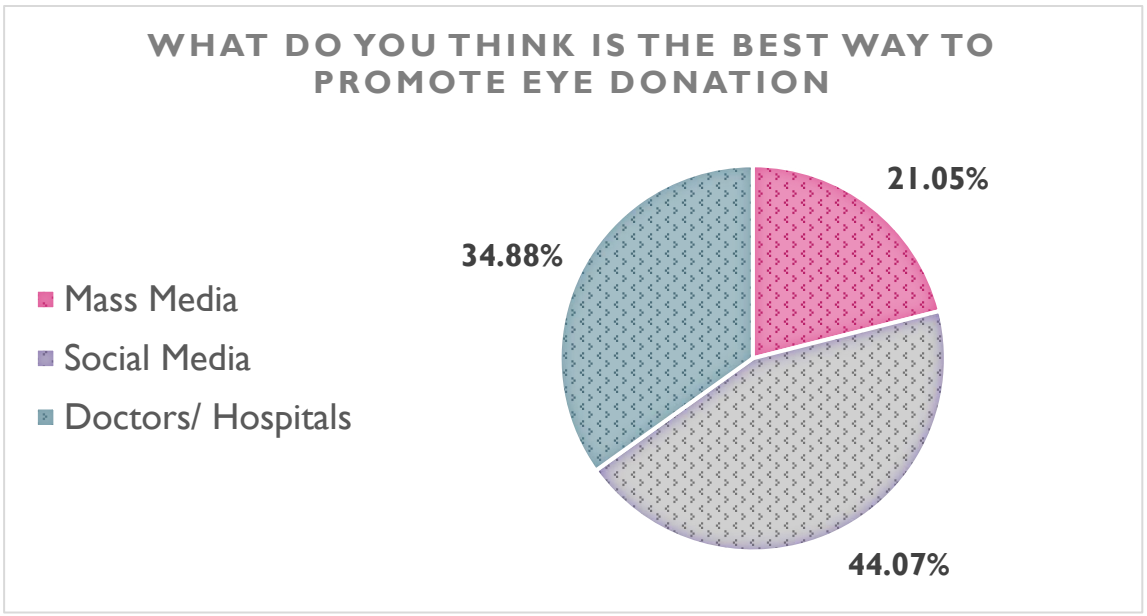



**Figure 5: Opinion on best method for improving the attitude towards eye donation**

Over half of the participants belonged to the age group of below 25, about 51%. The male to female distribution was quite equal almost 50% each. The postgraduates participated belonged to the speciality of a variety of fields and they were

classified as Clinical, Surgical and Para / Pre-clinical. Clinical and surgical departments represented about 43% of the participants each and the remaining 14% were from para / pre-clinical departments. 13.5% of the participants belonged to the speciality of ophthalmology. (from Table 1)

A majority of 68% agreed to the principle of eye donation, 18% were neutral and a 13% disagreed. About 70% agreed to pledge or have already pledged their eyes for donation. Of the members who agreed to pledge or have already pledged about 27% commented that they will not reveal this information about their pledge to their family members. Among the members who said no for eye donation, about 40% commented it is because of family members and 15% due to religious reasons. The remaining were due to fear of disfigurement or medical reasons. (from Figures 1 and 2)

Almost half of the participants (52%) claimed to know someone personally who have pledged their eyes for donation (Figure 3). Over 90% of participants agree that there is a shortage of eye donors in India (figure 4). We see from the figure 5 that over 44% agreed on social media being the current best platform for eye donation, while 35% stated that doctors and hospitals would be the best source for promotion of eye donation.

The Knowledge score comparison revealed statistically significant differences between the age groups of the participants. The higher the age group the higher their mean score were significantly with the age group above 30 having the mean score of 66.81 (Very Good). There were no significant differences in the scores between the genders. The scores of clinical departments were significantly higher. The postgraduates belonging to the speciality of ophthalmology scored near excellent, with a mean score of ~69 (Table 2).

From Table 3, 4 and 5, we see there being a significant association between agreeing to the principle of eye donation and willingness to pledge their eyes. Also, personally knowing someone who has pledged their eyes and pledging the eyes themselves. While there is no association between their opinion on thinking there a shortage or no shortage of donor in India and having to pledge their eyes for donation.

**Table 2: Comparison of mean knowledge scores among the participants' demographics**

**Knowledge Mean Score = 57.27 ±15.31**

| Group | Sub-groups | Mean | SD | p-value |
|---|---|---|---|---|
| **Age** | Below 25 | 54.90 | ±15.13 | < .001* |
| | 25 - 30 | 56.50 | ±14.02 | |
| | Above 30 | 66.81 | ±15.19 | |
| **Gender** | Male | 56.95 | ±15.05 | .721 |
| | Female | 57.58 | ±15.60 | |
| **Department** | Clinical | 54.88 | ±15.00 | .022* |
| | Surgical | 60.00 | ±15.67 | |
| | Para & Pre-clinical | 56.05 | ±13.99 | |
| **Ophthalmology** | No | 55.48 | ±14.79 | < .001* |
| | Yes | 68.78 | ±13.63 | |

* - Significant p-value ( < 0.05) [Minimum possible score – 0, Maximum possible score – 100]

**Table 3: Association between agreement of the principle of eye donation and their willingness**

| **Do you agree on the principle of eye donation** | | **Would you/ Have you pledged your eyes for donation ?** | | |
|---|---|---|---|---|
| | | No | Yes | Total |
| Disagree | Count | 42 | 0 | 42 |
| | Percentage | 100% | 0% | 100.0% |
| Neither | Count | 49 | 6 | 55 |
| | Percentage | 89.1% | 10.9% | 100.0% |
| Agree | Count | 1 | 206 | 207 |
| | Percentage | 0.5% | 99.5% | 100.0% |
| Total | Count | 92 | 212 | 304 |
| | Percentage | 100.0% | 100.0% | 100.0% |
| Fisher's Exact test; p-value <.001 (Highly Significant) | | | | |

**Table 4: Association between familiarity and attitude among the participants**

| **Personally know someone who has pledged their eyes for donation** | | **Would you/ Have you pledged your eyes for donation ?** | | |
|---|---|---|---|---|
| | | No | Yes | Total |
| No, I don't | Count | 60 | 86 | 146 |
| | Percentage | 41.1% | 58.9% | 100.0% |
| Yes, I do | Count | 32 | 126 | 55 |
| | Percentage | 20.3% | 79.7% | 100.0% |
| Total | Count | 92 | 212 | 304 |
| | Percentage | 100.0% | 100.0% | 100.0% |
| Fisher's Exact test; p-value <.001 (Highly Significant) | | | | |

**Table 5: Association between opinion on shortage and attitude among the participants**

| Do you think there is shortage of donors for eye donation in India? | | Would you/ Have you pledged your eyes for donation ? | | |
|---|---|---|---|---|
| | | No | Yes | Total |
| No, I don't | Count | 6 | 16 | 22 |
| | Percentage | 27.3% | 72.7% | 100.0% |
| Yes, I do | Count | 86 | 196 | 282 |
| | Percentage | 30.5% | 69.5% | 100.0% |
| Total | Count | 92 | 212 | 304 |
| | Percentage | 100.0% | 100.0% | 100.0% |
| Fisher's Exact test; p-value = .481 (Not Significant) | | | | |

## 4. DISCUSSION

In this comprehensive study, a meticulous and thorough assessment was conducted to gauge the level of understanding possessed by the participants in relation to eye donation. Furthermore, an in-depth analysis was carried out to ascertain the prevailing attitudes held by the individuals towards the concept of eye donation. Through the systematic examination of participants' knowledge and attitudes on the subject of eye donation, valuable insights were obtained regarding the awareness levels and perceptions surrounding this critical aspect of healthcare. By delving into the intricate details of both cognitive understanding and emotional disposition towards eye donation, this research endeavour sought to provide a nuanced understanding of the factors influencing individuals' decisions pertaining to the donation of their eyes for the betterment of others in need.

It was revealed that a majority, accounting for 68% of the respondents, expressed their agreement with the fundamental concept of eye donation. In contrast, a significant proportion of 18% maintained a neutral standpoint on the matter. This neutrality could indicate an internal conflict within individuals who, while understanding and acknowledging the importance of eye donation, may also harbour concerns or reservations that deter them from actively committing to the act of pledging their eyes for donation. Moreover, a notable 14% of the participants outright disagreed with the concept of eye donation, reflecting a divergence in views and beliefs within the participants.

Similarly, we see that approximately 70% of the participants have shown a willingness to either commit to donating their eyes or have already made such a pledge. Consequently, it becomes imperative for us to delve deeper into identifying and analysing the underlying factors that influence a participant's decision to agree with the principle of eye donation like the gratification gained from helping the blind to see is one such common reasons for eye donation (14). As analysis revealed a statistically significant positive association between agreement of the principle of eye donation and the willingness to pledge one's eyes. Next we see that a substantial 27% of the survey participants who expressed willingness to pledge for eye donation had reservations about informing their family members of their decision. This reluctance to share such intentions with their immediate kin could be a key factor contributing to the hesitation observed in individuals when it comes to eye donations.

Among those who were disinclined to pledge their eyes, it becomes evident that family-related concerns rank is one of the foremost deterrents, closely followed by apprehensions regarding potential disfigurement and medical issues, with religious beliefs being cited as the least but still a reason, nonetheless. Unlike in general public (non-medicos), Srinivas M et al.,(15) show evidence that religious reasons (like being born blind in their next birth) etc., are a common reason for hesitancy. So there very well exists a possibility that the family reasons (most common reason amongst doctors, in our study) could have a significant portion of them being due to the religious beliefs of their elders or parents and evaluating the religious reasons

in detail and addressing them through further research would be beneficial in decreasing the hesitancy towards eye donation significantly. Finally, there were no selections for the option, fear of misuse of the donated eyes.

In contrast to conventional promotional strategies that heavily rely on mass media channels for dissemination, the approach adopted in this particular instance by medical professionals deviated from the norm by prioritising direct promotion through doctors and hospitals to the general public as also stated by Gupta N et al., to strengthen the hospital corneal retrieval program (16).This deliberate choice suggests a nuanced awareness of the sensitive nature of the subject matter at hand and underscores the necessity for medical professionals to personally engage with the public in order to cultivate a constructive attitude towards the practice of eye donation. The participants have shown a commitment to addressing the inherent social taboos surrounding eye donation head-on, recognising the pivotal role they play in reshaping public perceptions and fostering acceptance of this vital humanitarian cause.

The knowledge score among the participants were rated good (mean score – 57.27) based on our classification of scores for this questionnaire. Among the participants, it was noted that those pursuing postgraduate studies in ophthalmology exhibited a notably higher level of knowledge. This finding is expected given their expertise in the field and familiarity with the procedures and steps involved. The mean score of ophthalmology postgraduates exceeded that of non-ophthalmology postgraduates by 13.3 points, a statistically significant difference (p-value < .001). Hence, they play a pivotal role in enhancing awareness and understanding of eye donation among various other departments through the implementation of educational initiatives. These programmes will be designed to highlight key points that can address the most incorrectly answered questions, like, anyone, regardless of existing eye conditions or HIV status can become a donor.

Moreover, emphasising the fact that the donation procedure can be carried out at the individual's residence, eliminating the need for transportation to a medical facility, is crucial. Furthermore, stating that eye donation does not result in facial disfigurement in the donor. The significantly higher score of future ophthalmologists may also explain the higher score of ~5 points attained by the surgical department in comparison to others (p-value = .022), with ophthalmology postgraduates being prominently represented within this departmental subgroup.

Similar studies by Parija S et al.,(17) show high awareness of eye donation among postgraduate doctors, though Saquib M et al.,(11) points out that knowledge gaps remain in key areas. Most understand the basic concept, but many are unclear on the ideal donation timeframe (within six hours of death). Similar to the results by the research of Mudhol RR et al.,(12) knowledge about eligibility and medical conditions affecting donation is limited. Awareness of eye banks and their functions is generally adequate, but room for improvement exists.

Another compelling finding derived from our comprehensive analysis indicates a noteworthy correlation between individuals who personally know someone who has pledged their eyes for donation and their own inclination to also pledge or have already taken the initiative to do so (p-value < .001). In addition, we explored another pertinent factor - the misconception that there is an abundance of eye donors in India, which could potentially deter individuals from making their own eye donation pledges. Our investigation revealed that a small percentage (~7%) of participants held the belief that there is an ample supply of eye donors, yet this belief did not exhibit any significant correlation with their willingness or reluctance to pledge their eyes for donation. We however see a great percentage of positive attitude towards eye donation similar to studies by Arya S K et al., (18) compared to some other studies (9), This could mean there is significant geographical variance as well.

## 5. RECOMMENDATIONS

- Awareness programmes on common misconceptions regarding eye donation to the public to promote agreement towards the principle of eye donation.
- Target approaches to other medical departments regarding the procedures in eye donation and steps for becoming an eye donor
- Urge eye donors to speak about their motives and reasons behind eye donation with their friends and family members, colleagues and coworkers.
- Analysing and addressing the religious reasons behind the hesitancy with further research.

## STRENGTHS

- This study was done exclusively on medical professionals (those who have completed their MBBS and are registered medical practitioners).
- Investigating the reasons for hesitation shall lead to methods for improving acceptance towards the principle of eye donation amongst doctors, which in turn can exponentially improve the attitude of the general public.

## 6. LIMITATIONS

- Though the scores of Ophthalmology residents are higher in comparison it could be even more but since we have included many freshly joined postgraduates their attitude and awareness regarding eye donation could be lesser than the rest of the ophthalmology team.
- The sample size was calculated with the intention of maximum participants required for the study, which was 400, ($n = 4pq/d^2$), with p = 50, q = 100 – 50, d (margin of error) = 5%. But only ~ 300 was attainable.

## 7. CONCLUSION

Research shows the need to make eye donation appealing to everyone. Addressing fears of disfigurement and medical uncertainties through education can improve attitudes towards eye donation. Misconceptions about facial disfigurement must be cleared to encourage potential donors.

Awareness programmes targeting postgraduates can help spread accurate information about eye donation. This can foster a culture of donation within the medical community and beyond. Further research on family disapproval and religious beliefs is needed to understand resistance to eye donation.

Identifying these influencing factors allows for strategies to change attitudes and increase acceptance of eye donation. By shaping perceptions, we can encourage more individuals to consider this generous act

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