

AWARENESS OF EYE DONATION AMONG GENERAL POPULATION OF WEST BENGAL

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ABSTRACT

Corneal blindness is one of the most significant causes of blindness all over the world. The fourth most common cause of blindness in the world is corneal blindness. Over the years, the Eye Bank Association of India has made a number of attempts to increase the rate of corneal procurement to combat corneal blindness. One of the major reasons of this lacking number of corneal donations is the lack of awareness among society about corneal donation. In this research a questionnaire had been designed to evaluate the awareness of corneal donation and it has been observed that 64.68 % people were aware about eye donation while only 16% of the people are ready to donate their eyes. Although ocular donation is widely known still there is a need for improvement about the knowledge regarding eye donation like the age group who can donate their eyes or the ideal time of donation or the causes behind visual impairment and blindness in the developing country. This shows that the media's coverage and social awareness of eye donation in this population needs to be increased. To get the readiness from awareness to give eyes, specific actions must be taken to remove the impediments.

Keywords: *Eye donation, Awareness, Corneal Opacity, Corneal blindness, West Bengal*

INTRODUCTION

Blindness is becoming a significant worldwide health hazard. Corneal abnormalities are the third most prevalent cause of blindness, behind cataracts and glaucoma, according to the WHO. According to the most recent worldwide predictions for 2020, over 596 million individuals have distant vision impairment, and 43 million are blind. The majority of this eyesight damage might have been avoided or remedied. An additional 510 million individuals have untreated near-vision impairment (GBD 2019). Low- and middle-income countries account for about 83% of all cases of visual impairment. It is generally concentrated among under-served communities within nations. 3 Impaired eye health impacts individuals throughout their lives, is a primary public health concern and is a significant impediment to sustainable development. The burden of visual impairment in India is estimated to be 62 million, with 8 million being blind and 54 million having impaired vision (Pascolini and Mariotti, 2012). According to the World Bank's collection of development indicators derived from officially recognised sources, India's rural population was 65.53% in 2019 (Sumita Das, 2021). Corneal blindness is the world's fourth most prevalent cause of blindness (Bourne et al., 2015; Pascolini et al., 2012). Trachoma is the most common cause of corneal blindness, affecting 4.9 to 5.5 million people (Whitcher et al., 2001). Ocular trauma, xerophthalmia, ulceration, ophthalmia neonatorum, onchocerciasis, leprosy, and the use of conventional eye treatments are all prominent causes of corneal blindness (Gupta and Tandon, 2013; Taylor & Taylor, 1999; Thylefors, 1992; Whitcher & Srinivasan, 1997; Chirambo, Benezra, 1976; Yorston, Foster, 1994). It is predicted that a considerable percentage of corneal donors are unsuitable for corneal transplantation (Dandona et al., 1999). The proportion of safe donor eyeballs now available, 2.77 lakh donor eyes are required to conduct, and 1 lakh corneal transplants are performed in India each year (Saini, 1997). The Government of India (GOI) has attempted to decrease the backlog of blindness via comprehensive eye care services, including corneal transplantation, under the NPCB (National Program for Control of Blindness) (Midya et al., 2021). The Eye Bank Association of India has made several attempts over the years to boost the rate of corneal procurement. The corneal procurement rate is now 49,000 per year;

nevertheless, there is still more work to be done to counteract the growing incidence of corneal blindness cases; various studies show that the figure might be as high as 30,000 instances each year (Acharya *et al.*; 2019). Increased public support or understanding and overcoming the variables of eye donation are often used to increase eye donation. Many individuals are born with vision impairments, and some may lose sight due to an accident. In most circumstances, giving an eye after death may assist in providing sight to many others. Even though a considerable percentage of corneal blindness raises the social and economic cost each year, eye banking in India is still in its early stages. According to the 2001 census, India's rural population is 148 million people, with around 91,000 persons blind due to corneal disorders (Dandona *et al.*, 2001). Bilateral corneal disease is projected to blind around 190,000 persons in India, with an additional 20,000 cases occurring yearly (Krishnaiah *et al.*, 2004). Even though corneal transplantation is the most effective organ transplant, the odds of patients recovering sight are low, and the level of corneal procurement in India is poor and insufficient to satisfy the need for a successful transplant (Dandona *et al.*, 1999). Trachoma, corneal ulcers following xerophthalmia, and newborn ophthalmia are the most common causes of corneal blindness (Oliva *et al.*, 2012). The most prevalent form of human transplantation is corneal transplantation to restore eyesight in people with corneal blindness (Yew *et al.*, 2005). There is a rising demand for corneal transplantation among the general public, particularly in countries such as India, where patient acknowledgement of eye donation is required. As a result, raising public awareness about eye donation has become the most critical problem, particularly in our country. However, a significant impediment to eye donation is the general public's need for more information and unfavourable attitude (Patil *et al.*, 2015). Due to the general public's lack of knowledge about eye donation, I chose this initiative to raise awareness of eye donation.

Aim and Objective of the Project

- To find out the awareness of eye donation among general find out their knowledge and interest in eye donation with the help of an easy survey questionnaire.
- The study's main objective was to assess the awareness of eye donation in the urban slum population and the willingness to donate eyes after death.

Related Literature

Biswas *et al.* (2010) set up a pre-tested, semi-structured eye health and eye donation questionnaire with 1525 participants in the study, all of whom attended VIII, IX, and X of eight schools and were under sixteen years of age was provided to collect the primary data. Questions asked in the local language included demographic Information, students' knowledge of eye health and donation, and sources of Information about eye donation. According to the authors, on average, 81.65% of students know about eye health, and 81% know about eye donation, but only 32.1% know the ideal time to donate an eye. In addition, 52.6% of students cited print and electronic media (e.g., newspapers and television) as their primary sources of Information about eye donation. They concluded that media advertising needs to be improved. Strategies need to be developed to educate students so they can serve as role models and encourage others.

Nekar *et al.* (2012) conducted cross-sectional research to gather data from the 403 participants who attended eight different institutions. The authors found that 96% of the students recognised what eye donation was and that people may give their eyes after they pass away. The majority (61%) know that eye donations must be made in the next six hours. 69% think there are no age restrictions for eye donation. 68% of respondents express an opinion. Women are more likely than men to know that eye donations should not disfigure the face. 33.4% know that corneal transplants are the only type of eye surgery. The willingness to donate eyes is 78.1%. From this result, they concluded that most people would like to donate eyes. However, poor vision, religious beliefs, fear of the procedure, and social shame are significant barriers to such donations. They, therefore, concluded that students need to be educated to combat this stigma.

Kumar *et al.* (2012) discovered that 400 medical, nursing and paramedical students participated in a cross-sectional survey using a predesigned and pre-tested questionnaire. According to the study's authors,

only 46.75% were ready to give their eyeballs, even though 98% were aware of the operation. Only 39.7% of students knew that the eye should be removed within six hours of a person's death, and 94% were unaware that India had eye banks. 48.5% of them had some knowledge about corneal excision and transplantation. Surprisingly, a considerable number of students (68.5%) believed they would need their family's permission before donating an eye. The authors determined that medical, paramedic, and nursing students had highly diverse levels of awareness and understanding. Despite greater awareness, there still needs to be more knowledge and motivation in this field.

Singh *et al.* (2018) investigated eye donation awareness and readiness to give eyes after death in an urban slum community. They conducted cross-sectional, population-based research in 20 urban slum clusters in New Delhi, recruiting 2004 persons aged 18 years and older, obtaining informed permission and assessing awareness of eye donation using a predesigned close-ended questionnaire. The authors estimate that the average age of the recruited participants was 36.53 13.68 years. They discovered that 34.3% of the sample population needed more awareness about eye donation, and 7.78% had excellent knowledge. People between 18 and 30 were much more eager to give their eyeballs than older age groups. The authors concluded from this finding that there is significant knowledge of eye donation, but the desire to pledge eyes is shallow among the urban slum population. Consequently, additional effort is required to convert this awareness into actual eye donation among the urban poor.

Krishnaiah *et al.* (2004) discovered "awareness of eye donation" and "willingness to pledge eyeballs for donation" among the rural population of Andhra Pradesh, southern India, in their study. They conducted cross-sectional population-based research in the rural population of Andhra Pradesh using a predesigned close-ended questionnaire, with a total of 7,775 participants of all ages participating. According to the authors, this population's age-gender-adjusted frequency of knowledge of eye donation was 30.7%, yet just 0.1% had promised eyes. Among individuals aware of eye donation, 32.9% were willing to donate their eyes, whereas 50.6% wanted more information before deciding whether or not to donate their eyes. The authors observed that one-third of informed individuals did not pledge their eyes, and 50.6% required additional information to make a decision. Only around one-fifth of people aware of eye donation has promised their eyes. The scientists concluded that more excellent information transmission is required if more eyes are to be pledged.

Patil *et al.* (2012) investigated adult knowledge of eye donation in rural Pondicherry, India. They conducted cross-sectional research at the Rural Health and Training Centre (RHTC) of the Community Medicine department, interviewing 196 persons who visited the RHTC after providing informed written permission. Their information was gathered using a predesigned and pre-tested questionnaire in their native language. Eighty.6% of the 196 participants knew that eye donations might be made. Television was the most common source of information on eye donation (65.2%), with significant associations between education, employment, and awareness. The authors found that although awareness is high in this community, the number of persons who pledged is low, and more effort has to be made to convert awareness of eye donation into pledging and procurement.

Multiple mechanisms, including the enzymatic breakdown of neurotransmitters, neuroinflammatory mediators, redox reactions (Halliwell, 2006), abnormal protein folding, phagocytosis, and defective ubiquitination and proteasome degradation systems (Andersen, 2004; Zhao *et al.*, 2016), as well as external sources (Pinazo-Durán *et al.*, 2015), contribute to the abnormally elevated ROS production associated with age-related mitochondrial dysfunction. Different species use different combinations of enzymatic (e.g., Catalase, Glutathione peroxidase, Superoxide dismutase, metallothionines, glutathione transferase) and non-enzymatic (e.g., glutathione, vitamin C, vitamin E, beta-carotene) antioxidants to keep their ROS levels stable (Martins *et al.*, 2016). Cellular proteins, lipids, and nuclear/mitochondrial DNA are all susceptible to oxidation during periods of oxidative stress, which leads to cell damage and death (Butterfield *et al.*, 2002; Cross & Templeton, 2004). Neurodegeneration is both the cause and effect of a spiralling increase in reactive oxygen species (ROS) (Almasieh *et al.*, 2012)

MATERIALS AND METHODS

After receiving informed consent, a self-administered, semi-structured questionnaire was used to gather the required data. The School of Medical Sciences of Adamas University conducted this poll in private for four months, from September 2022 to December 2022. People received a self-designed survey through MS Forms. The questionnaire covered demographic Information, knowledge of eye donation, justifications for giving or not donating eyes, intent to give eyes, and information sources. With the help of the Epi-info software programme, Version 6.04, the data were input and analysed. Data was reported as a percentage.

Inclusion criteria: All people aged 40 years or older who consent to participate in the study.

Exclusion criteria: Those people aged less than 40 years and those who did not consent to be a part of the study

Type of study: Cross-sectional study design

Period of study: September 2022 to December 2022

Study site: Nilganj Barrack pore West Bengal, India

Sample size: 147 participants, 88 males and 59 females.

Software: Epi-info software package, Version 6.04.

RESULTS

Strategy and Statistical Concerns

Results: Total of 147 participants responded to a survey conducted by our team.

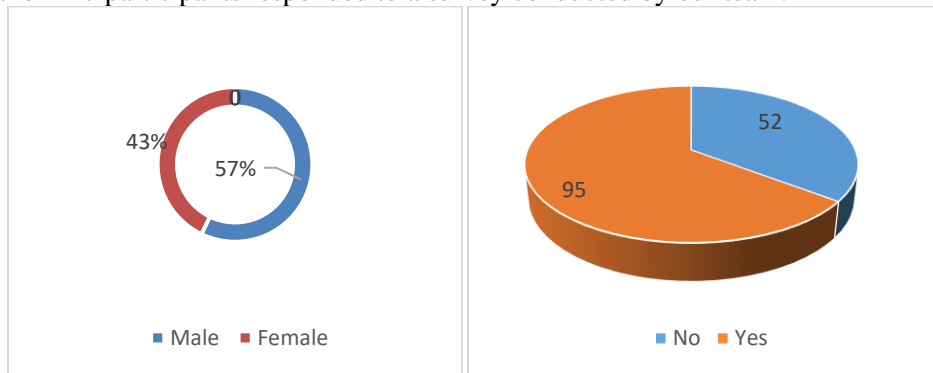


Figure 1: It depicts almost equally male and Female participants.

Figure 2: It reveals that 64.68 % of the participants have heard of eye donation, while 35.32% are unaware of it.

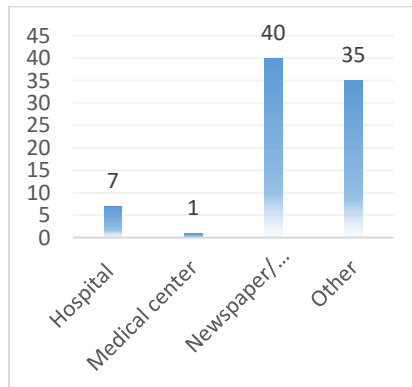


Figure 3: It demonstrates that the majority what they learned about eye donation From Newspaper/Television & other sources

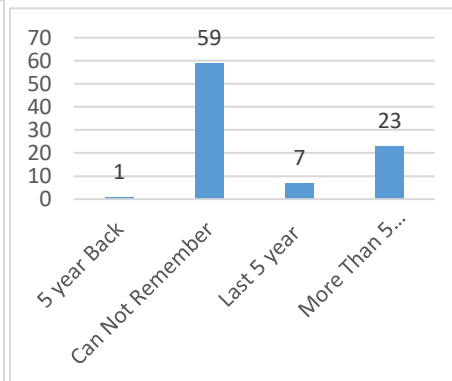


Figure 4: It shows most People need to remember when they heard about eye donation.

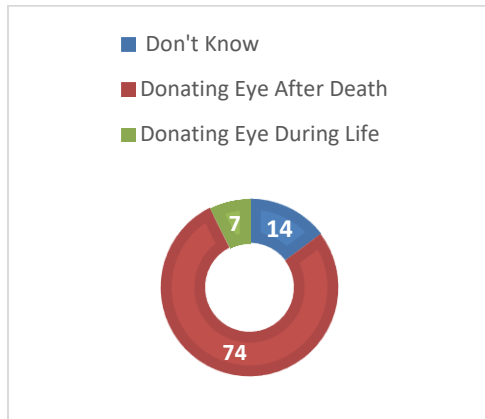


Figure 5: It shows Information about the eye donations known to the of majority people.

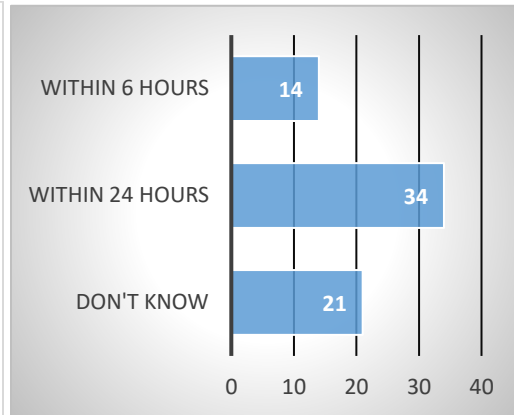


Figure 6: It shows that most people have misconceptions about the timing of eye donation after death

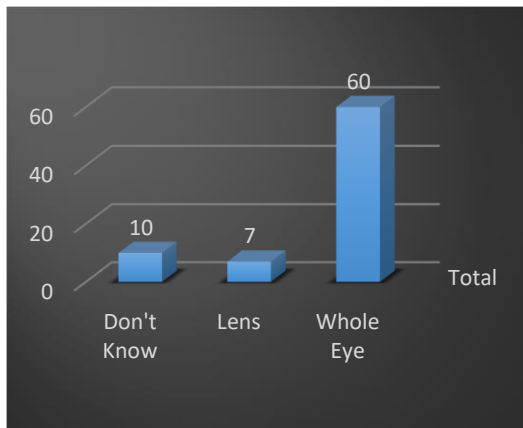


Figure 7: It shows that number of people do not know which part of the eye is donated

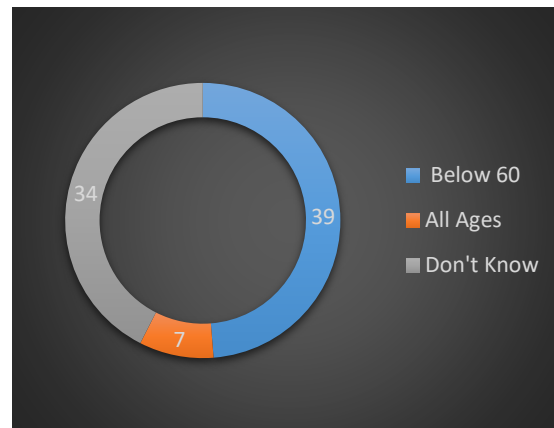


Figure 8: It shows that many people do not know the actual age of those eyes donated.

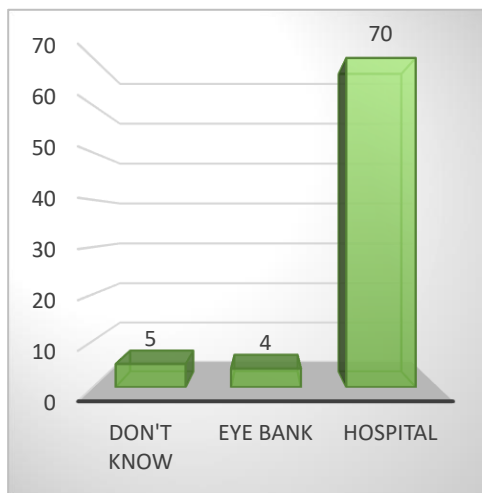


Figure 9: It shows that the majority of people has misconceptions about where to approach for eye donation.

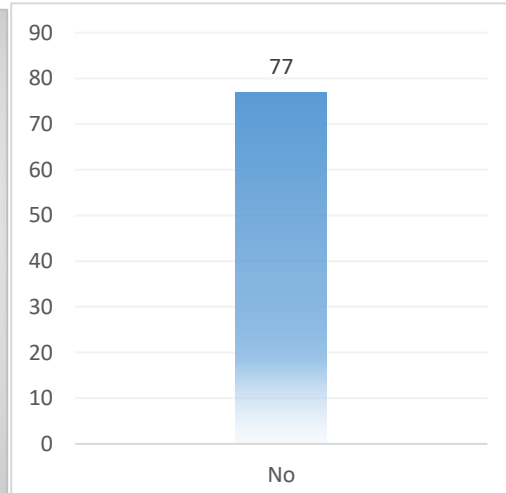


Figure 10: It shows that no one knows someone who has donated their eyes before death.

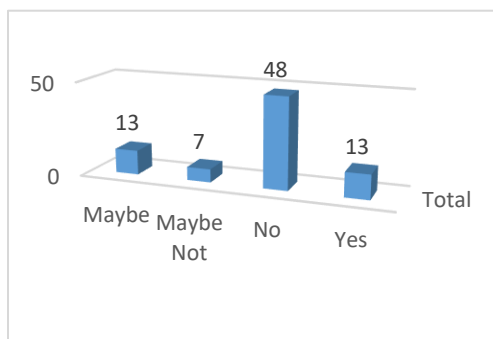


Figure 11: It demonstrates that the majority of people are unwilling to donate eyes

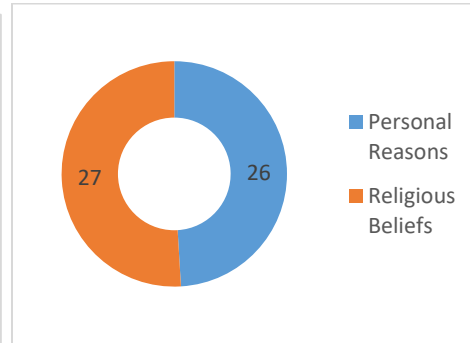


Figure 12: It explains why they do not want to donate to their eyes.

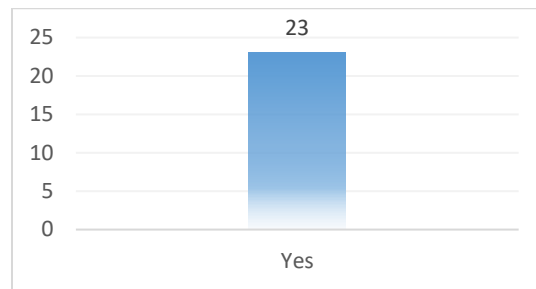


Figure 13: These are the people who want to donate their eyes so that they will suggest it too.

DISCUSSION

The current study differs from others in that it was conducted amongst the older population aged 40-90 years, while the bulk of the population is aged 50-70 years. The current research includes 57% males and 43% females (Fig.1). The current survey found that 64.68% of the population was aware of eye donation (Fig.2). In a survey of undergraduate medical students in Bhopal, 98% were aware of eye donation. Another survey found that 10.86% of people in 20 urban slums in New Delhi were aware of eye donation, but 80.6% of persons in rural Pondicherry were informed. According to the current research findings, the mass media has an essential role in raising awareness. Newspapers, television, and radio are also responsible for disseminating awareness, as shown by the studies of Biswas *et al.*; Singh *et al.*, and Krishnaiah *et al.*, (2004). According to the findings of this study, 42.10% of the Information was obtained via television and radio stations (Fig.3).

The cornea may be retrieved from anybody who died within six hours of their death. To ensure the success of the corneal transplant, corneas must be restored at the appropriate period after death. In the current survey, 0% of the public was aware that one might only donate the cornea rather than the whole eyeball (Fig.5). In the current research, only 20.28% of respondents were aware of the best time to donate eyes after death, indicating a lack of knowledge (Fig.6). In research conducted by Patil *et al.* in Pondicherry, 53.2% of the community was aware of the best times for giving eyes after death; this high knowledge was likely owing to the diverse subjects who gave eyeballs, which included teachers, students, social workers, and family members. Biswas *et al.* (2010) conducted an inquiry in North Kolkata. Because the population comprises educated secondary school students, 32.1% of the population was aware that the best time for eye donation is within 6 hours after death. According to the current survey, just 8.75% of the public thinks there is no age restriction for eye donation (Fig.8). According to Nekar *et*

al., 69% of the public believes there is no age restriction for eye donation. The current research found that most of the public (88.60%) was unaware of the eye bank facility and misunderstood contacting a hospital for eye donation.

In comparison, 5.06% of the population was aware of the eye bank service (Fig.9). According to Nekar *et al.*, the majority of the populace (74.1%) was unaware of the eye bank facility. However, they knew that the hospital with an eye bank was an appropriate location for collecting the eyes. It was clear since the research was done among medical students, who are better educated and conscious of eye donation, and their population was 63.52% larger than our group.

According to the current study, a minor population of 16.04% expressed their willingness to donate their eyes. In comparison, the majority of the population of, 59.25%, showed no signs of willingness to donate their eyes. A population of 24.69% had less knowledge and awareness about eye donation, so they were unsure of donating their eyes after death (Fig. 11). According to research by Krishnaiah *et al.*, only 30.7% of the population was aware of eye donation. Just 0.1% of the population volunteered to give their eyes. In another survey by Singh *et al.*, 34.3% of the public was unaware of eye donation.

In comparison, only 7.78% of the population had great awareness of eye donation, and only 28% of respondents were eager to give their eyes after death. The discrepancy might be attributed to increased social involvement and exposure to mass media communication techniques such as radios and television sets in various parts of the nation. According to the current research, 50.94% of the population was unwilling to give their eyes due to religious views (Fig.12). According to research conducted by Nekar *et al.* and Biswas *et al.*, (2010) the reluctance to give eyes was found to be 60% and 78.2% owing to religious views, respectively, which is one of the critical difficulties in eye donation.

In conclusion, the current research highlights the necessity to increase the identification of eye donation in the studied population. Based on the findings of this research, we propose that particular health awareness programmes be established and implemented in local governments by ophthalmologists, teaching professionals, community and religious leaders, non-profit, non-governmental groups, and instructors. The current study's results are compared to previous investigations (Table 1, Reference).

CONCLUSION

According to this research, people were generally inclined to sign up for eye donation and were well aware of the benefits of doing so. When promoting eye donation in the community, it is important to take into account the imagined barriers to doing so. The misinformation and improper use of the donated tissue are the main reasons why there are barriers to eye donation rather than cultural or religious ones. The students can actively participate in eye donation drives as helpers and serve as counsellor for eye donors. They can also help by spreading knowledge and encouraging others to donate their eyes. In conclusion, our findings reveal that there needs to be more awareness about eye donation and a decent understanding of the best time to donate. The desire to donate eyes must be enhanced to boost cornea procurement and close the gap between the demand and supply of corneal tissues.

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