

Willingness towards eye donation: A public health necessity in Pakistan

Fareeha Ayyub¹, Ume Sughra², Saad Alam Khan³, Sultana Kausar⁴, Wajid Ali Khan⁵

¹ Lecturer, Department of Optometry, Pakistan Institute of Ophthalmology, Rawalpindi, Pakistan

² Professor, Al-Shifa Research Center, Al-Shifa School of Public Health, Rawalpindi, Pakistan

³ Clinical Optometrist, Department of Optometry, Al-Shifa Eye Trust Hospital, Rawalpindi, Pakistan

⁴ Lecturer, Department of Optometry, Ripah International University, Islamabad, Pakistan

⁵ Dean, Department of Optometry, Pakistan Institute of Ophthalmology, Rawalpindi, Pakistan

Author's Contribution

¹ Conceptualization of study, analysis, and interpretation of data

²⁻⁵ Drafting the article or revising it critically for important intellectual content. final approval of the version to be published

Article Info.

Conflict of interest: Nil

Funding Sources: Nil

Correspondence

Fareeha Ayyub

fareeha.ayub74@gmail.com

A B S T R A C T

Introduction: According to the World health organization (WHO), a person is said to be blind when he/she has visual acuity of less than 3/60, and/or a corresponding visual field of less than 10°; for a smaller diameter, in the better eye with the best possible correction. At present, approximately 39 million individuals are bilaterally blind, and another 285 million with severe visual impairment.

Objective: To assess the willingness and knowledge of the people regarding eye donation and to evaluate factors associated with eye donation.

Methodology: This cross-sectional study was carried out in the outdoor patient department (OPD) of two governments and two private tertiary healthcare hospitals in Rawalpindi and Islamabad from Nov 2018 to January 2019. A total of 360 individuals who visited OPD of the tertiary health care hospitals were included. Data were obtained by using an interview-based questionnaire after taking informed consent. Data was entered in SPSS 22. Qualitative variables were presented as frequencies and percentages and Quantitative variables as a mean & standard deviation. Inferential analysis was done by applying the Chi-Square test and binary logistic regression.

Results: Out of 360 respondents, the majority were males 201 (55.8%). Two hundred and six (57.2%) were willing to donate their eyes. Willingness showed a statistically significant association with occupation. 175 (48.6%) had good knowledge regarding eye donation. Male respondents had 3 times more knowledge regarding eye donation as compared to females (OR 3.440, a p-value is <0.01, CI: 2.1- 5.4). Respondents having an age higher than 30 years had 2 times high knowledge as compared to individuals having an age less than 30 years (OR 2.07, a p-value is <0.03, CI:1.1-2.6).

Conclusion: The majority of the people showed willingness but had little knowledge regarding eye donation procedures and eye banks in Pakistan. The donation rate is low in Pakistan due to a lack of resources and awareness.

Keywords: Willingness, Corneal blindness, Eye donation, Knowledge, Eye bank

Cite this article as Ayyub F, Ume S, Khan SA, Kusar S, Ali WK. Willingness towards eye donation: A public health necessity in Pakistan. JSTMU. 2022; 5(2):81-85.

Introduction

According to the World health organization (WHO), a person is said to be blind when he/she has visual acuity of less than 3/60, and/or a corresponding visual field of less than 10°; for a smaller diameter, in the better eye with the best possible correction.¹ At present, approximately 39

million individuals are bilaterally blind, and another 285 million with severe visual impairment.² Majority of blind people approximately 90% are living in developing countries.³ Corneal blindness is the 4th leading cause of blindness. It affects 1.9 million people (5.1%) globally after

cataracts which affect 20 million people (51%) globally.⁴ Out of total blindness (18.7 million) in India, 0.19 million are blind due to bilateral corneal disease.⁵ In Malaysia, it accounts for 3.42% of all blindness.⁶ Pakistan is a developing country, where the national blindness and visual impairment survey reported the prevalence of blindness to be 0.9%; out of which corneal scarring (11.8%) is the leading cause after cataracts (51.5%).¹ The most frequent cause of corneal blindness is trachoma, trauma, Xero-ophthalmia, ophthalmia-neonatum, keratoconus, ocular trauma, onchocerciasis, and the use of traditional eye medicine.⁷ Corneal transplantation is the only treatment option for restoring sight in those with corneal blindness, which can only be accomplished through corneal donation.⁸ Corneal donation is low in Pakistan, but the demand is very high, therefore we are dependent on foreign countries like Sri Lanka, the USA, and Europe for donations.⁹ Limited data has been found on awareness of eye donation in Pakistan. So this study aimed to assess the willingness and knowledge regarding different aspects of eye donation among the general population and this study will also help to educate people about the eye donation procedure so that more individuals will come up to donate their corneas and assist in reducing the rate of corneal blindness.

Methodology

A cross-sectional study was done on attendants accompanying patients visiting OPD of tertiary health care facilities in twin cities i.e. Rawalpindi and Islamabad. Sample size was calculated by Z^2pq/e^2 , $Z=1.96$, p (expected percentage) = 65, q (100-p) = 35, e (margin of error) = 5. The total sample size was calculated to be 350. Individuals attending OPD of the hospitals were selected using a consecutive sampling strategy. Individuals of both gender; aged above 18 years were included. An interview-based pre-validated questionnaire was used to collect data. The questionnaire consists of socio-demographic variables, knowledge questions regarding different aspects of eye donation, and willingness to pledge the eyes. Permission was taken from the Ethical review committee (Reference No: ERC-55/AST18) of Al-Shifa trust eye hospital and the medical superintendent (MS) of the selected hospitals. Moreover, verbal informed consent was also taken from every individual before they participated in

this study. Face and content validity was checked by circulating it to experts in the field. A few questions were found redundant and unclear to interpret, which were then removed or modified. Data was entered and analyzed by using SPSS version 22. The descriptive analysis was done and frequencies and percentages for qualitative variables and mean, and standard deviation for quantitative variables were presented. The willingness was asked by asking the individuals' opinions regarding eye donation with yes, no, and don't know. All the questions related to knowledge were computed and categorized into good (>6) and poor (<6) based on the mean (6) as a cutoff point. Inferential analysis was done by running Chi-square and binary logistic regression. A p-value of less than 0.05 was considered significant.

Results

A total of 360 participants were enrolled in this study. One hundred and fifty-nine (44.2%) were from private hospitals while 170 (47.2%) were from government hospitals (Table 1).

Table 1: Socio-Demographic Characteristics (n=360)

Demographics	Frequency (n=360)	Percentages
Hospital Category		
Government	170	47.2
Private	159	44.2
Gender		
Male	201	55.8
Female	159	44.2
Age (Years)		
18-30	184	51.1
Greater than 30	176	48.9
Education (Years)		
0-12	228	63.3
Greater than 12	132	36.7
Monthly expenditure		
30000 or less	218	60.6
Greater than 30000	142	39.4
Area of Residence		
Urban	257	71.4
Rural	103	28.6
Employment status		
Medical	103	28.6
Non-Medical	124	34.5
Non-Working	133	36.9

The majority of the participants i.e. 206 (57.2%) showed a willingness to donate their eyes and almost 52% of the participants had poor knowledge. The most common source of information regarding eye donation was Mass media through television 124 (34.4%) followed by social media 57 (15.8%) and Abdul Sitar Edhi; who willed to donate his eyes after death; 37 (10.3%). One hundred and eighty-four (51.1%) respondents reported that consultation

for donating eyes should be taken from any general hospital, while 51 (14.2%) were thoughtful eye specialists for this purpose. Approximately 60% of individuals did not know about the eye bank in Pakistan. Willingness was statistically significant to working status. Knowledge was found statistically significantly associated with age, gender, employment status, education level, and hospital category (Table 2).

Table: 2 Association of Willingness and Knowledge with demographics (n=360)

	Willingness			P- value	Knowledge		P-Value
	Yes 206 (57.2%)	No 111 (30.8%)	Don't Know 43 (11.9%)		Good 175 (48.6%)	Poor 185 (51.4%)	
Age				0.20			0.01*
18-30	111 (60.3)	49 (26.6)	24 (13.0)		101 (54.9)	83 (45.1)	
Greater than 30	95 (54.0)	62 (55.9)	19 (44.2)		74 (42.0)	102 (58.0)	
Employment status				0.02*			0.003*
Medical	64 (63.4)	25 (24.8)	12 (11.9)		67 (31)	36 (32.1)	
Non-Medical	77 (60.2)	32 (25.0)	19 (14.8)		58 (46.5)	66 (53.5)	
Not-working	65 (49.6)	54 (41.2)	12 (9.2)		50 (31)	83	
Education				0.15			0.001*
0-12 Years	126 (55.3)	78 (34.2)	24 (10.5)		70 (40%)	138 (74.6)	
Greater than 12 Years	80 (60.6)	33 (25)	19 (14.4)		105 (60)	47 (25.4)	
Gender				0.12			0.001*
Male	123 (61.2)	53 (26.5)	25 (12.4)		125 (62.2)	76 (37.8)	
Female	83 (52.2)	58 (36.5)	18 (11.3)		50 (31.4)	109 (68.6)	

*Statically significant p-value is < 0.005

A significant regression model was found ($p < 0.01$). This model was explained between 18% (Cox 3 & 24 % (Nagelkerke) of the variance between knowledge status and correctly classified 51.4% of cases. Males were 3 times more likely to have good knowledge as compared to females. (OR 3.205, the p -value is < 0.01 , CI: 1.9- 5.1). Respondents with an age greater than 30 years were 2 times more likely to have good knowledge as compared to respondents with an age less than 30 years. (OR 2.07, the p -value is 0.03, CI: 1.1-2.6) (Table 3).

Table: 3 Binary Logistic Regression modeling for predictors of knowledge regarding eye donation

Knowledge				
	Sig	Exp B	95% CI	
			Lower	Upper
Gender	0.00*	3.440	2.168	5.459
Age	0.03*	2.074	1.051	2.666
Hospital Categories	0.12	0.702	0.447	1.103
Education	0.00*	1.004	0.311	0.816

*Statically significant p -value is < 0.005

Discussion

In the present study, 360 individuals were included. Good and poor knowledge was found among 175 (48.6%) and 185 (51.4%) individuals respectively. The main objective of this study was to assess the willingness of participants to about eye donation. In the present study; despite having poor knowledge, 206 (57.2%) individuals were willing to pledge their eyes after death, which is less than the willingness shown by adults in Singapore (67%).¹¹ In this study, 316 (87.8%) participants agreed that eye donation should be encouraged which showed the favorable response of participants towards eye donation.

Despite having maximum willingness of individuals; the donation rate is low in Pakistan due to a lack of resources and awareness among the general population. In a current study, people have no idea where to get access or to whom we should consult to get information about eye donation. In India, a government organization was involved in doubling the donation rates as per the target set by the NCPB (National Program for the control of Blindness) in Gujrat and Tamil. Their success was attributed to several NGOs that constantly raise

awareness about eye donation among the people of India.¹² But in Pakistan there is no such governmental/non-governmental organization at aims to raise awareness among the population. An eye bank is another factor that affects the donation rate because in the current study maximum i.e. 215 (59.7%) participants were unaware of the presence of an eye bank in Pakistan. Al-Shifa Trust eye hospital took the lead and established the first-ever eye bank in Rawalpindi, Pakistan on August 01, 2018, but in India, there are 120 eye banks formally established in different parts of the country.^{13, 14} Another objective of this study was to assess the knowledge regarding eye donation. In the current study, 80.6% of individuals had heard about eye donation which is higher than the studies conducted in North West Ethiopia (57%), and Mangalore (44%).^{15, 16} In the present study, 48.6% of the participants had good knowledge regarding eye donation which is less than the knowledge score in studies conducted in Malaysia (69%)· Singapore (80.7%), and North-West India (70.5%).^{6, 11, 17} It may be inferred that this difference in knowledge may be due to the lower literacy rate in Pakistan (65%) as compared to other countries' adult literacy rates such as that of Singapore (97.5%) and India (74.3%).^{18, 19} This could be the reason for misconceptions about eye donation because in the current study 55% of the individuals considered that not only the cornea but the whole globe is extracted during the procedure. Overall this comparison shows that greater effort needs to be exerted to increase the level of awareness about eye donation among the general population. In the current study, the majority of the individuals i.e. 261 (72.5%); considered that healthcare workers are the ones who can promote eye donation; followed by media i.e. 57 (15.9%). So Ophthalmologists, Optometrists, General physicians, Medical students, non-governmental organizations, and religious leaders should be motivated to work together to increase the awareness level and donation rates. Seminars, workshops, and social media may increase awareness and confiscate the misconceptions that make people restrain from donating their eyes.

Conclusion

This study that showed the willingness for eye donation among the general population is high despite having inadequate knowledge regarding eye donation procedures. In Pakistan, the donation rate is low due to a lack of resources and several factors such as a lack of awareness about eye banks, misconceptions about eye donation, and limited campaigns for awareness. Such factors collectively contribute to the low donation rate.

References

1. Whitcher JP, Srinivasan M, Upadhyay MP. Corneal blindness: a global perspective. *Bull World Health Organ.* 2001; 79(3):214-21. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2566379/pdf/11285665.pdf>
2. Pascolini D, Mariotti SP. Global estimates of visual impairment: 2010. *Br J Ophthalmol.* 2012; 96(5):614-8. DOI: <https://doi.org/10.1136/bjophthalmol-2011-300539>
3. Oliva MS, Schottman T, Gulati M. Turning the tide of corneal blindness. *Indian J Ophthalmol.* 2012; 60(5):423-7. DOI: <https://doi.org/10.4103/0301-4738.100540>
4. World Health Organization. Priority eye diseases. World Health Organization, Geneva. 2009. Available form: www.who.int/blindness/publications/globaldata/en.
5. Sushma H, Warad VG, Kshetrapal M. Knowledge, attitude and practice about eye donation among medical and paramedical students in tertiary eye care hospital. *Kerala J Ophthalmol.* 2016; 28(2):112. DOI: https://doi.org/10.4103/kjo.kjo_30_16
6. 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(1):41. DOI: <https://doi.org/10.4103/0301-4738.73727>
7. Dineen B, Bourne RR, Jadoon Z, Shah SP, Khan MA, Foster A, et al. Causes of blindness and visual impairment in Pakistan. The Pakistan national blindness and visual impairment survey. *British journal of ophthalmology.* 2007; 91(8):1005-10. DOI: <https://doi.org/10.1136/bjo.2006.108035>
8. Shakir M, Bokhari SA, Shakir Zafar ZK, Rizvi SF. Corneal Graft in Children. *Pak J Ophthalmol.* 2012; 28(2). DOI: <https://doi.org/10.36351/pjo.v28i2.427>
9. American eye bank to donate five corneas to Pakistan each month - Daily Times. *Daily Times.* 2017.
10. Parvez MA, Alvi S, Mahida K, Subhani S, Kumar R, Basit A, et al. Eye donation: awareness in an urban population of Pakistan: an analysis. *Ann Punjab Med Coll.* 2016; 10(3):142-6. DOI: <https://doi.org/10.29054/apmc/2016.280>
11. 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(7):835-40. DOI: <https://doi.org/10.1136/bjo.2004.057372>
12. Verma R, Khanna P, Prinja S, Rajput M, Arora V. The national program for control of blindness in India. *Aust J Med Sci.* 2011; 4(1):1. DOI: <https://doi.org/10.4066/AMJ.2011.505>
13. The Express Tribune. 2018. First-ever eye bank opens in Pakistan, The Express Tribune. [online]. Eye banking in India. *Indian journal of ophthalmology.* 1989 Jul 1; 37(3):110.
14. Hussien MS, Gebreselassie KL, Woredekal AT, Adimassu NF. Willingness to donate eyes and its associated factors among adults in Gondar town, North West Ethiopia. *BMC Ophthalmol.* 2017; 17(1):1-6. DOI: <https://doi.org/10.1186/s12886-017-0577-1>
15. Maiya GR, Kiran KG, Badiger S. Assessment of awareness and perception regarding eye donation among selected patients attending field practice area of a tertiary care hospital in Mangalore: a cross-sectional study. *Int J Community Med Public Health.* 2018; 5(7):2920-5. DOI: <https://doi.org/10.18203/2394-6040.ijcmph20182623>
16. Duggal M, Brar GS, Prasad VS, Gupta A. Public attitudes toward eye donation in Northwestern India. *In Transplantation Proceedings* 2003; 35(1):19-20. DOI: [https://doi.org/10.1016/S0041-1345\(02\)03826-5](https://doi.org/10.1016/S0041-1345(02)03826-5)
17. Pakistan - Literacy rate | Statista (Internet). Statista. 2020 (cited 24 September 2020). Available from: <https://www.statista.com/statistics/572781/literacy-rate-in-pakistan/>.
18. Singapore: literacy rate for 15 years and older 2019. Statista (Internet). Statista. 2020. Available from: <https://www.statista.com/statistics/994945/singapore-literacy-rate-15-years-and-older/>
19. India Literacy Rate 1981-2020 (Internet). Macrotrends.net. 2020 (cited 24 September 2020). Available from: <https://www.macrotrends.net/countries/IND/india/literacy-rate>.