

## Research Article

# A study to assess awareness on eye donation and willingness to pledge eyes for donation in adult population in Gwalior district (M.P.), India

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## ABSTRACT

**Background:** Purpose of current study was to determine the awareness of eye donation and willingness to pledge eyes for donation in the government colonies (Central and state govt. colonies) of district Gwalior (M.P.). Corneal diseases constitute a significant cause of visual impairment and blindness in the developing world. Although Strategies to prevent corneal blindness are likely to be more cost effective, visual rehabilitation by Corneal Transplantation remains the major treatment for restoring sight in those who already have corneal blindness.

**Methods:** The present study was undertaken from July 2012 to Dec. 2012 with a total population 2192 was surveyed of people residing in central and state govt. Colonies of district Gwalior in which total of 500 houses were taken. The total population aged 30 years and above were interrogated by a predesigned questionnaire regarding awareness of eye donation, any eye related problem and willingness to pledge eyes for donation.

**Results:** The total respondents were 947 in which 481 (50.79%) were Males and 466 (49.21%) were females. The awareness of eye donation was present in 590 (62.30%) while 357 (37.70%) were not aware.

**Conclusion:** The awareness regarding eye donation should be increased so that the public's attitude would be more favorable to facilitate an increase in the number of corneas available for transplantation.

**Keywords:** Eye donation, Awareness, Willingness to pledge eyes, Population based cross sectional study

## INTRODUCTION

Corneal diseases constitute a significant cause of visual impairment and blindness in the developing world.<sup>1,2</sup> Corneal diseases including keratitis or trauma resulting in corneal scarring are a major cause of bilateral or unilateral blindness and visual impairment in children and young adults.<sup>3</sup> The Andhra Pradesh Eye Diseases Study (APEDS)<sup>4</sup> reported the prevalence of corneal blindness at 0.13% (95% CI: 0.64-0.24), constituting 9% of all blindness. APEDS also suggested a significant burden of corneal blindness in the rural population of Andhra Pradesh, of which 95% was avoidable. Although strategies to prevent corneal blindness are likely to be more cost effective, visual rehabilitation by corneal

transplantation remains a major treatment option for restoring sight in those who have corneal blindness.<sup>4</sup> The major causes of corneal blindness include trachoma, corneal ulceration following xerophthalmia due to vitamin A deficiency, ophthalmia neonatorum, use of harmful traditional eye medicines, Onchocerciasis, Leprosy and Ocular trauma.<sup>5</sup> Although Strategies to prevent corneal blindness are likely to be more cost effective, visual rehabilitation by corneal transplantation remains the major treatment for restoring sight in those who already have corneal blindness. According to the eye bank association of India, the current cornea procurement rate in India is 22000 per year.<sup>6</sup> It is estimated that a significant proportion of donor cornea are unsuitable for corneal transplantation. Based upon our current ratio of

available safe donor eyes, we would need 277000 donor eyes to perform 100000 corneal transplants in a year in India.<sup>7</sup> There is approximately 20-fold increase from the donor eyes available now. Shortage of transplantable corneas is common and has been the subject of much attention. To increase procurement of corneas, raising the level of public education on eye donation is an important first step. Soliciting for actual eye donation at the time of family death is a necessary and accepted practice.<sup>7</sup> Though the factors affecting procurement of corneas and the public attitude towards Eye Donation have recently received attention in the developed world, not much has been published from the developing world.<sup>8</sup> The decision to donate eye can light up people's lives. Because it provides vision to two corneal blind persons. Based on the above facts and keeping in view these facts, the present study has been undertaken with the objectives to assess the awareness of eye donation; any eye related problems, willingness to pledge eyes for donation and reasons for giving pledge for donating eyes and assess their views for use of donated eye. Based on these objectives to impart health education for donation.

**METHODS**

The present study was a cross-sectional study and was undertaken in central and govt. Colonies scattered throughout the area of District Gwalior. A list of all the government colonies was taken from the Collectorate Gwalior. From this list 5 colonies were selected randomly. The Govt. colonies were scattered in the different areas of city. In each colony the centre of the colony was chosen and from there 20 houses were interviewed. Later on 20 houses from North, 20 from South, 20 from West and 20 from East so that the entire area of the colony was covered. This was done in the 5 designated (Central and state govt. colonies). A total of 2192 population was surveyed and 500 houses were surveyed in which total persons aged 30 years and above were 947. The study period was from July 2012 to Dec. 2012.

In each house a pre structured detailed questionnaire was filled for the persons aged 30 years and above. They were enquired regarding awareness of aware donation and any eye related problem. They were also asked regarding pledge to donate their eyes and the reasons for not donating their eye and were also imparted health education for it. The data was collected, analyzed and interpreted. Informed verbal consent was also taken.

**RESULTS**

A total of 2192 population was surveyed in which 947 persons residing in Central Govt. and State Govt. colonies who were aged 30 years and above were interviewed. The socio-demographic profiles of the total respondents were shown in Table 1.

**Table 1: Showing socio-demographic profile of respondents.**

Sr. No.		Number	Percentage
<b>1</b>	<b>Gender</b>		
	Males	481	50.79
	Females	466	49.21
<b>2</b>	<b>Age distribution</b>		
	(a) Age distribution of respondents (n=947)		
	30-40	430	45.41
	41-50	314	33.16
	51-60	155	16.37
	61-70	33	3.48
	71 & above	15	1.58
	(b) Age distribution of respondents, males (n=481)		
	30-40	220	45.74
	41-50	154	32.01
	51-60	80	16.63
61-70	17	3.54	
71& above	10	2.08	
(c) Age distribution of respondents, females (n=466)			
30-40	210	45.06	
41-50	160	34.34	
51-60	75	16.09	
61-70	16	3.44	
71& above	5	1.07	
<b>3</b>	<b>Marital status (n=947)</b>		
	Married	933	98.52
	Unmarried	14	1.48
<b>4</b>	<b>Literacy status (n=947)</b>		
	Literate	885	93.45
	Illiterate	62	6.55
<b>5</b>	<b>Educational status (n=885)</b>		
	Primary	37	4.18
	Middle	112	12.66
	High school	97	10.96
	Higher secondary	101	11.42
	Graduate	316	35.70
	Post graduate	222	25.08
<b>6</b>	<b>Occupational distribution (n=947)</b>		
	Cultivators	1	0.1
	Skilled	12	1.27
	Own Buisness	40	4.22
	Service	449	47.42
	House wife	397	41.92
	Others	48	5.07
<b>7</b>	<b>Type of family (n=500)</b>		
	Single family	20	4
	Nuclear family	389	77.8
	Joint family	81	16.2
	Three generation family	10	2

The total males were 481 (50.79%) and females were 466 (49.21%) respectively. Among the total 744 (78.57%) were in the age group of 30-50 years in which males were 374 (77.75%) while females were 370 (79.40%). 933 (98.52%) respondents were married and the literacy rate was also high i.e. 885 (93.45%) as it was a Govt. employee colony. The maximum percentage were graduates 316 (35.70%) followed by postgraduates. 222 (25.08%). 449 (47.42%) were in the service and 389 (77.8%) were nuclear families. Among the total 947 respondents 903 (95.35%) were Hindus, 26 (2.75%) were Muslims and rest were Christians 18 (1.9%) as shown in Figure 1.

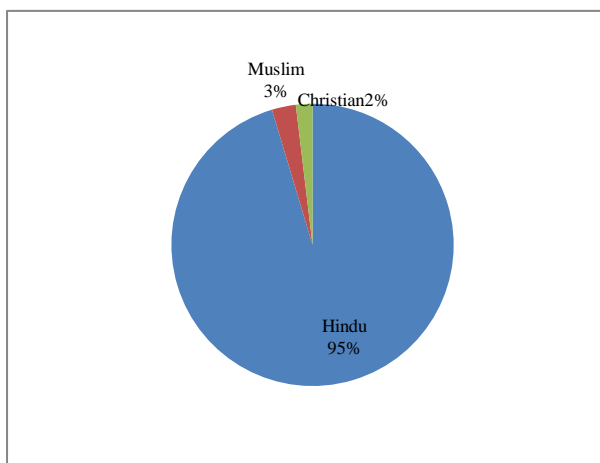


Figure 1: Showing the religion wise distribution of respondents.

Table 2: Showing the perception regarding eye problems and its types.

Sr. No.	Number	Percentage
<b>1</b>	<b>Eye problem (n=947)</b>	
	Present	449 47.41
	Absent	498 52.59
<b>2</b>	<b>Type of problem (n=449)</b>	
	Refractive error	391 87.08
	Cataract	40 8.91
	Infection	18 4.01

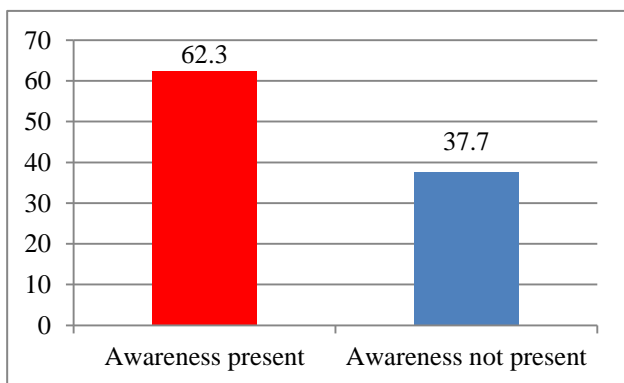


Figure 2: Showing the awareness of eye donation.

Table 3: Showing the sex wise distribution of awareness of eye donation.

Sr. No.	Number (n=947)	%
<b>1</b>	<b>Awareness of eye donation (n=947)</b>	
	Awareness present	590 62.30
	Awareness not present	357 37.70
<b>2</b>	<b>Awareness Present (481)</b>	
	Males	352 59.66
	Females	238 40.34
<b>3</b>	<b>Awareness not Present (466)</b>	
	Males	129 36.13
	Females	228 63.87

x = Subtotal will not match as multiple options were present.

Table 4: Showing the correlation of age with awareness of eye donation.

Age group	Awareness present (n=590)	%	Awareness not present (n=357)	%	Total
30-40	210	35.59	220	61.63	430
41-50	264	44.74	50	14.01	314
51-60	100	16.95	55	15.40	155
61-70	13	2.21	20	5.60	33
71 & above	3	0.51	12	3.36	15
Total	590	100.00	357	100.00	947

$X^2 = 115.71$ ,  $df = 4$ ,  $P = 0.000001$

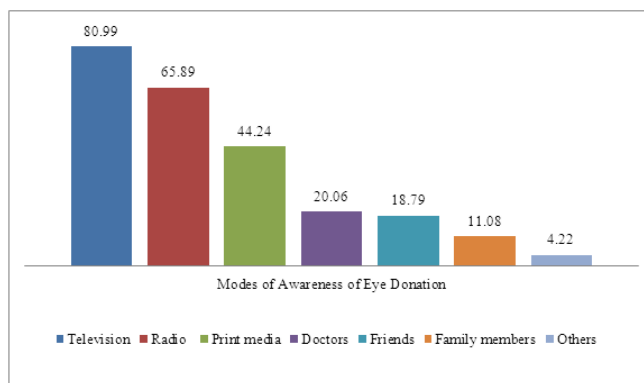


Figure 3: Showing different modes of awareness of eye donation.

Eye problems were present in 449 (47.41%) respondents in which 391 (87.08%) had refractive error problem as shown in Table 2. The awareness of eye donation was present in 590 (62.30%) while 357 (37.70%) were not aware of it as shown in Figure 2 & Table 3, 352 (59.66%) males were aware while 238 (40.34%) were females as shown in Table 3. As shown in Table 4 the maximum number of respondents who were aware were in the age group of 41-50 i.e. 264 (44.74%) while 220 (61.63%)

were not aware were in the age group of 30-40 years. The mode of awareness of eye donation was seen in 767 (80.99%) by Television followed by Radio 624 (65.89%) and then Print Media 419 (44.24%) as shown in Figure 3.

As shown in Table 5, 238 (40.34%) were willing to pledge eyes for donation in which 182 (76.47%) were males who pledged for eye donation, while 352 (59.66%) did not pledge to donate eyes. The maximum number were female (59.95%) and 141 (40.05%) were males who did not pledged as shown in Table 6. The response regarding awareness for the use of donated eye was enquired which showed that 120 (50.44%) did not know while 44 (18.48%) were aware and who were able to know that the donated eye is used to replace the cornea of another eye. 40 (16.80%) expressed that the donated eye is used to replace a part of another eye as shown in Table 7.

**Table 5: Showing the response regarding pledge to donate eyes.**

Sr. No.	Response	Number (n=590)	Percentage
1	Yes	238	40.34
2	No	352	59.66

**Table 6: Sex wise distribution who pledged or not pledged to donate eyes.**

Sex	Pledged		Not pledged	
	Number	%	Number	%
Males	182	76.47	141	40.05
Females	56	23.53	211	59.95
<b>Total</b>	<b>238</b>	<b>100.00</b>	<b>352</b>	<b>100.00</b>

$\chi^2 = 76.00, df = 1, P = 0.000001$

**Table 7: Showing the responses regarding awareness for use of donated eye who had pledged first.**

Reasons for use of donated eye	Number	%
Donated eye is used to replace another eye	40	16.80
Donated eye is used to replace a part of another eye	34	14.28
Donated eye is used to replace the cornea of another eye	44	18.48
Don't know	120	50.44
<b>Total</b>	<b>238</b>	<b>100.00</b>

The reasons for not pledging for eye donation were shown in Table 8 in which the maximum respondents commented on eye problem 757 (79.94%) while 284 (29.99%) had the view that they were afraid of deformity after the death while 189 (19.96%) had fear of born blind in next life.

**Table 8: Showing reasons for not pledging\*.**

Reasons for not pledging	Number (n=947)	%
Afraid of deformity after death	284	29.99
Fear of born blind in next life	189	19.96
Religious reasons	95	10.03
Eye Problem	757	79.94
Don't believe in its usefulness	47	4.96
Need more information	113	11.93

\*Subtotal will not match as multiple options.

Among 238 who pledged 119 (50%) knew that ideal time for donating eye was within 6 hrs. after death as shown in Table 9.

**Table 9: Showing the knowledge who has pledged\*.**

Reasons	Number	%
Ideal time for Donating Eyes within 6hrs. after death	119	50
Knows a person who has donated Eye	4	1.68
Knows contact place for Eye donation	0	0
Knows there is an Eye shortage in India	23	9.66
Willing to donate Eyes	238	100
Awareness about selling & buying if done	4	1.68

\*Subtotal will not match as multiple options were given.

## DISCUSSION

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. According to 2001 population estimates. India has a rural population of 148 million, and of whom approximately 18.7 million people are blind in India. "Every year another 20000 transplantation is probably the most successful of all organ transplant procedures, offering the potential for sight restoration to those who are blind from corneal diseases and the current. Corneal procurement rates are inadequate to meet the transplantation needs in India."

Data from our study shows that 590 (62.30%) of the total population surveyed were aware of eye donation but only 40.33% of them were willing to donate their eye. Knowledge of the usage of donated eyes was very poor despite reasonable awareness of eye donation. This indicates that, there is a gross inadequacy of media publicity on the entire cycle of eye donation in this population. In order to transform this awareness into the pledging and procurement if more cornea, knowledge of all steps of eye donation must be increased.

In the present study 590 (62.30%) were aware regarding eye donation while 50.69% was seen by Rao GN<sup>12</sup> and also by Priyadarshini B et al. study.<sup>10</sup> High figures of awareness and willingness have been recorded from

Indian studies from Delhi (55.4% & 41.5%), Tamilnadu (50.7%) rural (30.7%, 32.7%) and Urban (73.8% & 44.9%) Andhra Pradesh and Pune.<sup>11,13</sup>

In the present study those who had pledged had knowledge regarding the ideal time for donating i.e. with 6 hrs of death which is 119 (50%) which is more in comparison to the study done by Rao GN.<sup>12</sup> Knowledge about the time of eye donation is important, as it may not be ideal to utilize eyes that are donated later than 6 hrs after death for optical purposes. The low proportion of people who are aware of the optimal time to donate eyes despite awareness of eye donations suggests that a large proportion of donated eyes may not become available at an optimum time. To translate this awareness into pledging and procurement of eyes, knowledge about eye donation must be increased. Several factors are associated with obtaining consent for the procurement of eyes. The consent of family members for the donation is needed at the time of death, even if the deceased is a pledged donor. To increase procurement of corneas, raising the level of public education on eye donation is an important step. Soliciting for actual eye donation at the time of death is a necessary and accepted practice.<sup>9</sup> Though the factors affecting procurement of corneas and the public attitude towards eye donation have recently received attention in the developing world<sup>8</sup> not much has been published from the developing world. Prior knowledge about eye donation and the use of donated eyes could help to increase the level of consent of families. Another factor that could increase the procurement of corneas would be a legal obligation of hospital staff to request eye donation on death of a patient. In India there is currently no legislation to its effect.

In the long term, the optimum public health approach would be to reduce the recurrence of corneal blindness with effective preventive strategies, but in the short term the main way to deal with corneal blindness is to procure more corneas for transplantation. For this, the public should be made aware of how to become a pledged eye donor and how this pledge can be translated in to actual eye donation. More public education needed in this area as it would probably make the public's attitude to eye donation more favorable and this would facilitate an increase in the number of corneas available for transplantation.

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