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Original Research Article

Knowledge and Attitude Regarding Eye Donation among Students of Medical, Nursing and Allied Health Sciences at a Tertiary Care Hospital in Northern India

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Abstract

Purpose: To assess the knowledge regarding eye donation among students of Medical, Nursing and Allied Health Sciences and gauge their willingness for eye donation. ***Methods:*** The data was collected by online questionnaire method (Google forms) from medical, nursing and allied health care students for a group of 723 students. The questionnaire comprised of 30 questions covering various aspects. Knowledge, values, attitude and spiritual believes of participants were assessed to evaluate their willingness for eye donation. ***Results*:** Among 723 medical, nursing and allied health care students 449 (62.3%) were in the age group of 21-30 years with 479 (66.4%) being females and 244 (33.8%) males. Around 80% had knowledge about eye donation and 79.1% pledged to donate eyes. There was little knowledge regarding pediatric cornea donation and transplantation. ***Conclusion:*** The awareness regarding eye donation was high but pledge to donate eye and motivate others required further motivation. Various strategies can be adopted like educating students from all walks of life, focusing on strengthening the link between the hospitals and the rural population can further enhance the corneal procurement rate.

Keywords: Corneal transplantation, diminished vision, eye donation.

INTRODUCTION

Blindness is the most important public health issue. Visual impairment not only hampers daily activities, it also jeopardizes access to education, opportunities for gainful employment and participation in civil, political and social life. While it may be difficult to quantify visual impairment's impact in monetary terms, its socioeconomic impact and effect on quality of life is all the more unconscionable given it is largely preventable [1].

Globally, it is estimated that at least 2.2 billion people have a vision impairment or blindness, of whom at least 1 billion have a vision impairment that could have been prevented or has yet to be addressed.[1] Cataract and refractive errors form the major bulk of blindness. According to World Health Organization, diseases affecting cornea are major cause of blindness secondary to cataract in less developed countries [2]. Around 4.2 million people across the globe are blind because of corneal opacities being the cause. Etiology of corneal blindness is varied but most important corneal ulcers, corneal scarring and ocular trauma forms the major cause of corneal blindness that are under reported but may be responsible for 1.5-2 million new cases of corneal blindness every year. Causes of childhood blindness (about 1.5 million worldwide with 5 million visually disabled) include xerophthalmia (3,50, 000 cases annually), ophthalmia neonatorum, and less frequently seen ocular diseases such as herpes simplex virus infections and vernal keratoconjunctivitis. Despite these traditional eye medicine have also been implicated as a major cause of corneal ulceration in developing countries [2].

In India, it is estimated that there are approximately 6.8 million people who have vision less than 6/60 in at least one eye due to corneal diseases; of these, about a million have bilateral involvement.[3] It is

expected that the number of individuals with unilateral corneal blindness in India will increase to 10.6 million by 2020. National Programme for Control of Blindness (NPCB) estimates there are currently 1,20,000 corneal blind persons in India [3].

According to this estimate there is an addition of 25,000- 30,000 corneal blind cases every year in the country [4]. Treatable causes of corneal blindness can be prevented by effective health care delivery system by timely and prompt management. Many of those currently blind from corneal disease can be visually rehabilitated by corneal transplantation. Around 50% of corneal blindness is treatable and penetrating keratoplasty is the most effective and most often performed solid organ transplantation [5]. To cover the gap between the corneal blind patient and the procurement of cornea after death there is still derth of corneas required for transplantation. To bridge the gap and to assess the knowledge regarding eye donation various studies have been conducted across the country and abroad.

Since education on organ donation is a must for the society. The student community, medical and paramedical staff should be actively involved in this regard. Hence, in the present study we would evaluate the knowledge, attitude and practice among students of medical, nursing and allied health sciences and also compare the same between different groups.

METHODS AND MATERIALS

Design and study population

It is a cross sectional study conducted by the Department of Ophthalmology at tertiary eye care hospital on Medical undergraduate students (students of MBBS courses), Nursing students and students of Allied Health Sciences (BSc optometry, physiotherapy). 723students were enrolled for study which was held over a period of 3 months.

Questionnaire

The students were informed about the study, and informed consent was taken. Once the students agreed to participate in the study, they were asked to fill online survey form. The form contained 3 sections of analysis including Demographic parameter, Knowledge about Eye Donation and Attitude regarding Eye Donation.

The first section of the form included 6 questions regarding Demographic data. The second section contained twenty-five questions to assess the knowledge regarding Eye Donation. It helped to assess the area where information regarding Eye Donation was lacking and the methods that can be formulated to impart knowledge amongst medical, paramedical and nursing students, as they are the main link between hospital and general public and their knowledge related to the subject will help in increasing knowledge amongst the general population. The third section of the survey form contained questions regarding the Attitude related to the Eye Donation. It comprised of around 8 questions like - Are they willing to take pledge regarding Eye Donation, are they willing to motivate their friends/ family regarding Eye Donation, the myths regarding Eye Donation. The validity of the questionnaire was determined by a team of eye bank surgeons and further evaluated by the ethical committee.

Data collection and Analysis

Answers to the above questions were marked as multiple choices and the response was collected online and was analyzed. The knowledge was assessed by comparing with the gender and amongst students of various fields.

RESULTS

Total of 723 students were included in the study. 37.62% (272) were in the age group 15-20 years, 62.10% (449) were in the age group 21-30 years and 0.27% (2) were > 30 years of age. In the study conducted 33.74% (244) were males and 66.25% (479) were females. 95.71% (692) were Hindus. Around 56.84% (411) were MBBS undergraduate students, 29.04% (210) were nursing and 9.95% (72) were physiotherapy students and 4.14% (30) were B.Sc Optometry students (Table 1).

Table1: Demographic details of the students participating in the study (n=723)

Demographic Details	Number of students	Percentage
Age		
15- 20	272	37.62%
21-30	449	62.10%
31-40	2	0.27 %
Gender		
Male	244	33.74%
Female	479	66.25%
Occupation		
MBBS	411	56.84%
Nursing	210	29.04%
Pharmacy	72	9.95%
Bsc optometry	30	4.14%
Place of Residence		
Urban	419	57.95%
Rural	304	42.04%

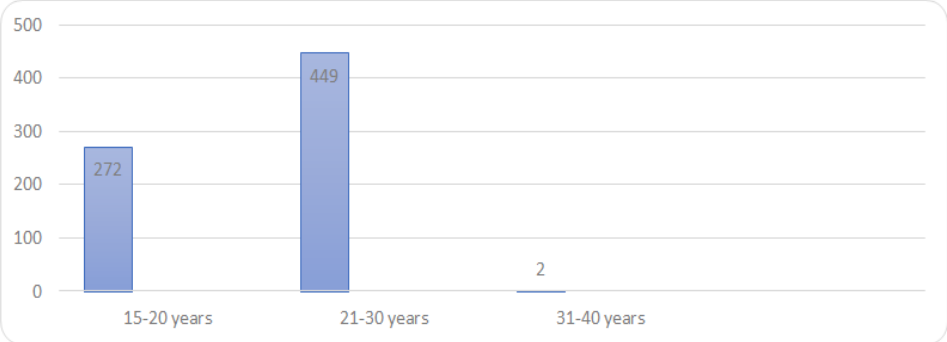

Fig 1: Distribution of students according to Age in years

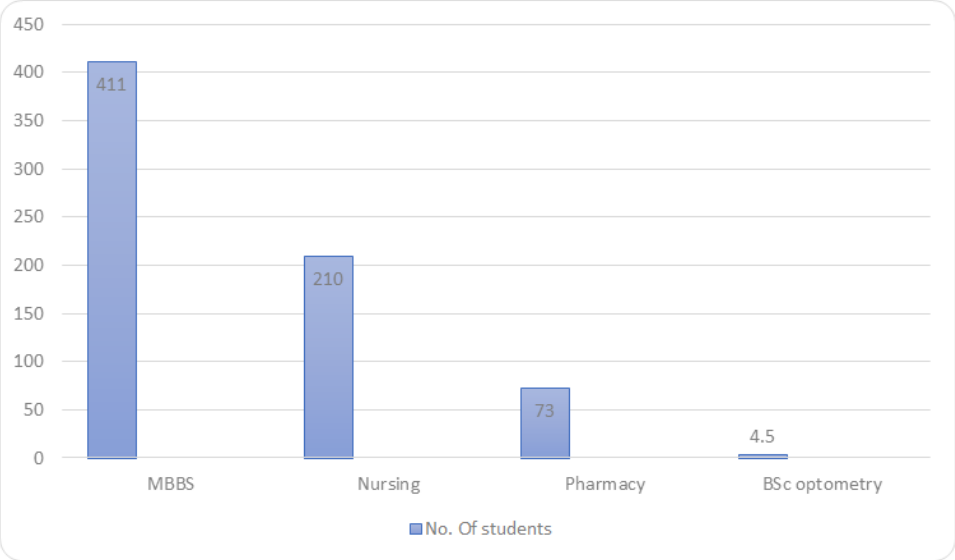

Fig 2: Demographic data related to occupation and distribution of students

KNOWLEDGE REGARDING EYE DONATION (Table 2)

99.44% (719/723) students had heard about eye donation while 0.55% (4/723) students had not heard about it. 44.26 % (320/723) reported the most common source of information was radio/television/social media, while knowledge through Doctors/nursing staff/hospital employment comprised of 34.57% (250/723). Other sources included - Newspaper/Magazine (13.9%) and family /relative (7.19%). 55.87% (404/723) students responded that eye donation means giving sight to blind while 41.49% (300/723) students believed eye donation is service to mankind.89.62% (648/723) students had knowledge regarding cornea being the part used for transplantation in eye donation. 58.64% (424/723) students knew that people suffering from infectious diseases like HIV/Hep B cannot donate cornea while 62.37% (451/723) responded that people having systemic disease like diabetes and hypertension can donate eye.72.06% (521/723) students knew the optimal time of eye donation is within 6 hours after time of death and 55.46% (401/723) students responded that the nearest place to contact in case of eye donation is the eye bank, while 27.66% (200/723) answered government hospital being the point of contact in case of eye donation. 17.98% (130/723) students knew someone who had donated eye and 10.37% (75/723) knew someone who had received the donated eye. Regarding Pediatric eye donation 48.96% (354/723) had no idea about pediatric corneal donation while 35.96% (260/723) students responded that pediatric cornea can be donated .66.66% (482/723) responded no blood matching is required for corneal donation while 18.5% (134/723) responded that blood matching is required for corneal donation.

Table 2: Questions to assess the knowledge regarding eye donation (n=723)

KNOWLEDGE	No of students Answered	Percentage
Have you heard about eye donation?		
Yes	719	99.44%
No	4	0.55%
How did you come to know about eye donation?		
Radio/ Television/ Social media	320	44.26%
Doctors/Nursingstaff/Hospital Employee	250	34.57%
Newspaper / Magazine	101	13.96%
Family/Relative/Friends	52	7.19%
What do you understand by Eye donation?		
Giving sight to blind	404	55.87%
Service to Mankind	300	41.49%
Others	19	2.62%
Can a living person pledge to donate eye?		
Yes	597	82.57%
No	69	9.54%
Don't know	57	7.88%
During transplantation which part of the donated eye is used for transplantation?		
Whole eye	30	4.14%
Cornea	648	89.62%
Sclera	11	1.52%
Lens	23	3.18%
Retina	11	1.52%
Can a person using spectacles (Refractive error) donate eye?		
Yes	356	49.23%
No	17	2.35%
Depends upon status of cornea	337	46.61%
Don't know	13	1.79%
Can a person having Corneal disease donate eye?		
Yes	27	3.73%
No	266	36.79%
May be depending upon the extent of corneal involvement	388	53.66%
Don't know	42	5.80%
Can a person with infectious disease (HIV/ Hepatitis B/ Corona) donate the eye?		
Yes	173	23.92%
No	424	58.64%
Don't know	126	17.42%
Can a person with systemic disease (Diabetes mellitus, hypertension, renal disease, heart problems) donate eye?		
Yes	451	62.37%
No	169	23.37%
Don't know	103	14.24%
Whether eyes can be donated only after death?		
Yes	351	48.54%
No	324	44.81%
Don't know	48	6.63%
What is the optimal time for eye donation after death?		
Within 6 hrs	521	72.06%
Within 12 hrs	59	8.16%
Within 12-24 hrs	67	9.26%
Don't know	76	10.51%
Do you know the nearest place to contact for Eye Donation?		
Eye bank	401	55.46%
NGO	50	6.91%
Government hospital	200	27.66%
Medical college	72	9.95%
Do you know a person who has donated eye?		
Yes	130	17.98%
No	593	82.01%
Do you know someone who is a recipient of donated eye?		
Yes	165	22.82%
No	415	57.39%
Don't know	143	19.77%

KNOWLEDGE	No of students Answered	Percentage
Can Pediatric cornea be used for Corneal donation?		
Yes	260	35.96%
No	109	15.07%
Don't know	354	48.96%
Can a child be a recipient of donor Cornea?		
Yes	522	72.19%
No	43	5.94%
Don't know	158	21.85%
Can the eyes be donated even if the deceased has not pledged for Eye Donation?		
Yes	375	51.86%
No	207	28.63%
Don't know	141	19.50%
Who can give consent for Eye Donation after the death of individual?		
Close blood relatives	656	90.73%
Treating Physician /Doctor	47	6.50%
Friends and neighbors	20	2.76%
Is blood matching required for Eye Donation?		
Yes	134	18.53%
No	482	66.66%
May be	107	14.79 %

Awareness regarding Eye donation (Table 3)

77.31% (n= 559) students were willing to pledge for eye donation while 22.68% (n=164) refused for eye donation. In 45.79% (256/559) students who agreed for eye donation the main reason was motivating others for eye donation while 29.15%(163/559) students believed that after their death someone else could see the world with their eye. Amongst students who refused for pledging for eye donation 52.43% (86/164) reported family objection being the main reason for refusing. 55.7% (403/723) students showed their willingness to donate the eye of their near and dear ones after their death. 87.13% (630/723) responded that eye donation was not against their religious belief and 93.4% (676/723) students did not believe in the myth that a person is born blind in next life if they donate their eye.

Table 3: Regarding Awareness related to eye donation

Are you willing to Pledge for eye donation?		
Yes	559	77.31%
No	164	22.68%
Reasons for pledging for eye donation? (n=559)		
You could see the world with your eye after you are gone	163	29.15%
It will act as motivation for Eye Donation	256	45.79%
Read an article or heard a speaker	47	8.40%
Friend or relative benefited from a eye donation	80	14.31%
Friend or relative donated cornea	13	2.32%
The reasons that prevent you from pledging for Eye Donation?(n=164)		
You think it disfigures donor's face	20	12.19%
You think it is religiously prohibited	10	6.09%
You don't know where to apply	48	29.26%
Family objection	86	52.43%
Are you willing to Donate eye of your near and dear ones after their death?		
Yes	403	55.73%
No	112	15.49%
Don't know	208	28.76%
Is eye donation against your religious belief?		
Yes	24	3.31%
No	630	87.13%
Don't know	69	9.54%
Do you believe in the myth like we will be born blind in next life if the person donates eye?		
Yes	14	1.93%
No	676	93.49%
Don't know	33	4.56%

DISCUSSION

Corneal blindness adds to social and economic burden every year and the corneal blindness is preventable and reversible. According to the Census

2011 the total rural population being 833.1 million and the urban population being 377.1 million. Total number of corneal blindness in India is 1,20,000. According to 2017-18 data collected by National Programme For Control Of Blindness (NPCB) target of collection of eyes for corneal donation was 50,000 and the achievement was 18,519. Every year another 20,000 new cases join the existing backlog.[3] Despite the fact that corneal 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 showed 33.74% were males and 66.25% were females and the students from medical and allied health sciences mostly comprised of the young population 62.10% in the age group of 21-30 years. 99.44% had heard about eye donation. More than 50% had knowledge about eye donation, the appropriate time of harvesting cornea after death, conditions in which eye cannot be donated. Significant amount of the students did not know much about pediatric corneal donation and transplantation. In our study 559 (77.31%) students were willing to pledge to donate cornea and the main reason for willingness was motivation for others to do same. Detailed knowledge of eye donation is mandatory to transform awareness into pledging and procurement of more corneas.

Neelam *et al*., [6] conducted a study on knowledge and attitude towards eye donation among health professionals and reported that out of population of 600 people 23% had excellent knowledge about corneal donation and willingness to pledge for donation was observed only in 6% of the participating health professional which was higher among older participants. In our study 71% pledged to donate eyes and most of them were in the age group 15-30 years.

Anuradha *et al*., [7] conducted a study on awareness, attitude and knowledge on school going children with average age being 15.01 years, and reported that 77.3% students were aware about eye donation amongst which males were maximum compared to females. Around 61% students were willing to pledge to donate eye. Though there was adequate awareness about eye donation their study found that willingness to pledge to donate eyes was less which needed more motivation.

Around 304 (42.04%) students in our study belonged to the rural area and were in the age group of 21-30 years which has a significant role in spreading awareness, knowledge amongst the rural population as they form a key link of spreading information and educating them regarding eye donation and motivating them to participate in the same.

According to Andhra Pradesh Eye Disease (APEDS) [8] study conducted in rural state of Andhra Pradesh it was reported that the prevalence of corneal blindness was 0.13%, constituting a significant 9% of all the blindness. APEDS also suggested a significant burden of corneal blindness in rural population of Andhra Pradesh of which 95% was avoidable. Thus, education and strengthening the link to rural population can help delivering appropriate knowledge and can result in pledging more eye donation from the rural population.

Study conducted by Krishnaiah *et al*., [9] on awareness on eye donation amongst all age groups in rural India population showed that only one fifth of those aware about eye donation pledged to donate their eyes, which is quite less than our study which focuses on the youth and 71% are motivated to pledge to donate their eyes which showed that young population can act as a big motivators for others as well.

CONCLUSION

The data from the present study suggests that students from all medical fields need more awareness and need to be motivated to pledge for eye donation. To cover the gap between knowledge about corneal donation to pledging and procurement of corneal tissue various approaches can be taken. Firstly, educating students in all fields, particularly those in medical profession about eye donation, can act as future Motivator for enhancing eye donation. Secondly, the grief counselling of relatives by medical staff following death of individual can be followed. Studies have shown that grief counselling has been successful in procuring organs [10, 11]. Though donor has to pledge to donate eye but it is the family members that need to be motivated to donate the eye. Thirdly, participation of both governmental and non-government organization in training staff, nurses, grief counsellor in positively approaching the family members and procuring the organ of donation following the defined protocols. On the preliminary education level school students can be focused and their workshops for spreading awareness regarding organ donation can be conducted. Various flash mobs, active participation of media regarding eye donation can further influence the general population in motivating them to participate in eye donation. Strategies followed in other countries regarding corneal donation can be followed eg: In USA the presumed consent law was introduced that is the concept of legal sanction, where if the dead has not registered any objection to donate while alive, consent is presumed and eye can be removed as required. Such law of presumed consent can be followed in India too.

Thus our study highlights some of the key aspects regarding knowledge and awareness related to corneal donation. Through proper education and training of the medical and paramedical students significant knowledge can be transmitted to the masses regarding corneal donation . Thus we can bridge the gap

between the preventable corneal disease and the treatment.

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