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- **Navigating Pediatric Ophthalmological Disorders**
- **Corneal Donations Knowledge Among Medical Students**
- **Ranibizumab vs. Bevacizumab in Diabetic Macular Edema**
- **Practice Trends of Optometrists and Refractionists Regarding Myopia**
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Attitudes and Knowledge of Corneal Donation Among Medical Students of Poonch Medical College, Rawalakot

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Abstract:

Objective: The objective of this study was to determine the awareness and perspectives of medical students regarding corneal donations. This research strives to elevate students' awareness, consequently fostering an increase in corneal donations.

Methods: Cross-sectional investigation on the premises of Poonch Medical College, Rawalakot was conducted in duration of 3 months. An English-language self-administered questionnaire was used to assess different aspects of the participants' awareness and perspectives on corneal donation. Data were analyzed using SPSS software. Tests were applied and a p-value of < 0.05 was taken to be significant.

Results: A total of 292 students participated in this study. A mean score of 3.22 ± 1.78 was achieved by the participants on the knowledge test. The most common reason for corneal donation was empathy for a blind person (62.3%), while a lack of information concerning corneal donation (61%) was seen to be the greatest barrier. There was no significant correlation between the knowledge and attitude of participants regarding corneal donations.

Conclusion: This study highlights a concerning lack of awareness about corneal donations among the participants. To boost donation rates, it's crucial to raise awareness among medical students. Bridging this knowledge gap necessitates organizing awareness-raising activities and motivating students for voluntary participation, ensuring they gain a fundamental understanding of corneal donation. *Al-Shifa Journal of Ophthalmology 2023; 19(4): 145-153.*
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Introduction:

Embarking on the journey to restore vision through corneal transplantation resonates deeply with individuals grappling with the shadows of corneal blindness. However, the success of this noble endeavor hinges crucially upon the availability of donor corneas. Globally, the pervasive scarcity of donor corneas casts a significant shadow over the collective quest to address the burden of corneal blindness. A strikingly revealing global survey underscores the stark reality that only about 1 in 70 deaths contributes to corneal donation, thus underscoring the dire need to bridge the persistent demand-supply gap¹. Remarkably, even in the year 2022, the United States conducted an approximate count of 61,000 corneal transplants, yet the

steadfastly growing demand remains unmet². Significantly, the survey echoes the sentiments of over half of the countries, acknowledging the acute insufficiency of donor corneas available for transplantation³.

However, our lens of concern extends beyond the borders of individual nations. Within Pakistan, a nation confronting its own challenges of corneal blindness, the poignant reality is that an estimated 1.9 million individuals yearn for the invaluable gift of sight⁴. Yet, the sobering truth remains that the pace of corneal donation lags significantly due to a myriad of reasons, encompassing limited awareness and intricate cultural dynamics⁵. Our medical students, standing as torchbearers for the future of healthcare, hold crucial perceptions about corneal donation. A revealing study conducted in Karachi unearths a notable concern, revealing that only 33.2% of these aspiring medical professionals possess substantial knowledge concerning corneal donation⁶. Similarly, in Lahore, a noteworthy 60.4% expressed their intention to donate, yet the evident necessity for widespread awareness is glaring⁷. Notably, the struggle echoes across the borders into India as well. Research conducted in Navi, Mumbai brings to light the fact that a mere 48.6% of medical students possessed awareness about eye donation, and a rather humble 28.6% were inclined to pledge their eyes⁸. The stark facts themselves bear testament to the reality. Pakistan bears witness to an annual demand for approximately 25,000 corneal transplants, a figure that far outpaces the number of actual transplants performed⁹. Moreover, the absence of a well-established eye donation infrastructure coupled with inadequate eye banks erects substantial barriers to corneal donation in Pakistan¹⁰. A revealing survey has laid bare a significant gap in the population's awareness concerning corneal donation¹¹.

The goal of the study was to evaluate the knowledge and attitudes of medical

students toward corneal donations and identify barriers to donations from the students' perspectives. Lastly, the intention was to draw comparative insights by aligning findings with global statistics, thereby illuminating the broader challenges and prospects tied to corneal donation awareness. Diving into the minds of medical students, this research aims to unveil the keystones that shape the trajectory of corneal donation rates. Such insights hold the potential to catalyze targeted educational endeavors, fostering a deeper grasp of the significance underpinning corneal donation. By bridging the knowledge gap, our vision extends toward a world where the equilibrium between supply and demand in corneal transplantation inches ever closer, inching us collectively toward the shared goal of eradicating corneal blindness.

Materials and Methods:

During the period of 3 months, we undertook this cross-sectional study within the confines of Poonch Medical College in Rawalakot, AJK, Pakistan. The study aimed to explore medical students' knowledge and attitudes regarding eye donation. Our study encompassed both male and female students, including individuals from their first year up to house officers.

Encompassing both clinical and pre-clinical medical students, we chose to employ a non-probability convenience sampling technique. This approach allowed us to include medical students who willingly opted to participate while excluding non-medical students and those who declined involvement. The determination of the sample size, resulting in 280 participants, was guided by Raosoft (Raosoft Inc, Seattle, Washington), and was based on a 95% confidence level and a 5% margin of error.

For data collection, we adopted a validated English language self-administered questionnaire consisting of 15 items. The ease of data collection was facilitated by

employing an online questionnaire, which was distributed through class representatives to be shared within their respective classes. All individuals provided informed consent, covering their willingness to engage in the study. Participants were assured of the confidentiality of their data, as well as their right to withdraw from the study at any point without repercussions. Rigorous safeguards were implemented to ensure both anonymity and confidentiality throughout the research process.

The majority of the questions took the form of closed-ended queries, offering response options encompassing "Yes," "No," or "Don't know". The scores for knowledge, attitude, and willingness domains were obtained by averaging all the responses to obtain an overall result for knowledge and attitude items. The items were then divided into two categories representing "Good" and "Deficient" Knowledge, Similarly, "Good" and "Bad" Attitudes and "Willing" and "Unwilling". After data cleaning and assigning codes, Statistical Package for the Social Sciences (SPSS), Version 22.0 (IBM Corp., Chicago, Illinois, USA) was used for data analysis. Descriptive Statistics were presented as frequencies and percentages for categorical data, and a mean was used for numerical values. The total score for correct answers to knowledge questions (out of 7) was correlated to attitude and willingness. In addition, the results of this research were compared to the past articles on the topic.

Stepwise forward logistic regression analysis was performed to determine factors associated with knowledge of corneal donation. Statistical significance was assumed at $P < 0.05$.

Results:

A total of 292 students actively participated in the conducted study. The participants' average age was recorded as 21.15 years, with a standard deviation of 1.7 years. On the background knowledge assessment, participants achieved an average score of

3.22 out of 7, indicating a subpar level of knowledge. Among the participants, 177 individuals (60.6%) demonstrated awareness that individuals who succumb to AIDS are ineligible to donate their eyes. Comparatively, a lesser count of 88 participants (30%) exhibited understanding regarding the disqualification of individuals with hepatitis for corneal donation. A minority of 49 participants (16%) erroneously believed that corneal donations had no restrictions.

The primary motive cited for corneal donation was empathy toward visually impaired individuals, as indicated by a substantial number of responses ($n=182$, 62.3%). Following closely, a noteworthy portion of participants ($n=140$, 47.9%) perceived corneal donation as a noble undertaking. Analyzing barriers to eye donation, the most prevalent impediment was a lack of information concerning corneal donation ($n=178$, 61%). Religious convictions also played a significant role ($n=101$, 34.6%), alongside prevalent myths associated with corneal donations ($N=90$, 30.8%). Lastly, familial pressure emerged as a factor contributing to reluctance in 47 cases (16%).

Pearson's correlation of knowledge on corneal donation among the samples and the attitude of the samples on corneal donations was found to be markedly low ($r=0.096$, $n=292$). The correlation between knowledge and willingness was positive ($r=0.330$, $n=292$).

In multivariate analysis, Female (OR = 1.84, 95% CL, 1.064-3.208; $P=0.029$); 21-25 years (OR = 2.394, 95% CL, 1.138-5.037; $P=0.021$) were found to be independently associated with knowledge (Table 3). This shows us that females were more knowledgeable than men and that people in the 21-25 years categories were more knowledgeable than 15-20 year-olds, in our sample.

Table 1 : Participant's parent's qualifications, age, knowledge score regarding corneal donations (N= 192)

Parameter	n (%)
Mean age in years \pm SD	21.15 \pm 1.7
Mean Knowledge Score \pm SD	3.22 \pm 1.79
Father's Qualification	
Illiterate	4 (1.4)
Elementary	11 (3.8)
High School	55 (18.8)
Graduate	202 (69.2)
Prefer Not Say	20 (6.8)
Mother's Qualification	
Illiterate	26 (8.9)
Elementary	25 (8.6)
High School	81 (27.7)
Graduate	133 (45.5)
Prefer Not Say	27 (9.2)

Table 2: Frequencies of correct answers and "don't know" responses to knowledge and willingness questions regarding corneal donation among medical students of Poonch Medical College (N = 292)

Item #	Questions and Responses	n (%)
1	Is there any eye bank in Pakistan?	
	Yes	71(24.3)
	Don't know	19(6.5)
2	Is there any age limit for corneal donation?	
	Yes (less than 65 years)	52(17.8)
	No	38(13)
3	Whom do you approach for an eye donation?	
	Ophthalmologist	207(70.9)
	Don't know	59(20.2)
4	Is there any time limit for Removal of eye after death?	
	Yes (2 to 6 hours after death)	134(45.9)
	Don't know	101(34.6)
5	How long can the eye be Preserved after removal?	
	Up-to 2 weeks	51(17.5)
	Don't know	182(62.3)
6	Which part of eye is removed from the donor?	
	Cornea	128(43.8)
	Don't know	95(32.5)
7	Will the identity of the donor be Revealed to the patient?	
	No	95(32.5)
	Don't know	83(28.4)
8	Are you willing to donate your eyes?	
	Yes	124(42.5)
	No	168(57.5)
9	Would you like to take money for the donation?	
	Yes	64(21.9)
	No	228(78.1)

Table 3: Multivariate analysis of Knowledge of the subjects regarding corneal donations

Variables		AOR(95% CI)	P
Gender	Male	1	0.029
	Female	1.84 (1.064 – 3.208)	
	Others	3.14 (0.156 – 63.218)	
Class MBBS	1st Year	1	0.854
	2nd Year	1.073 (0.502 – 2.296)	
	3rd Year	0.601 (0.233 – 1.550)	
	4th Year	0.994 (0.3281 – 3.012)	
	5th Year	1.230 (0.393 – 3.850)	
	House Officer	1.879 (0.2502 – 14.108)	
Fathers Qualification	Illiterate	1	0.438
	Elementary	2.436 (0.257 – 23.090)	
	High School	2.224 (0.294 – 16.789)	
	Graduate	2.427 (0.341 – 17.269)	
Mothers Qualification	Illiterate	1	0.937
	Elementary	0.952 (0.283 – 3.202)	
	High school	1.482 (0.531 – 4.132)	
	Graduate	1.099 (0.378 – 3.191)	
	Prefer not to say	2.047 (0.314 – 13.317)	
Age	15 to 20 Years	1	0.021
	21 to 25 Y	2.394 (1.138 – 5.037)	

Table 4: Comparison with other studies

Study	Know about corneal donation	Know about ideal time for eye collection (2-6hrs)	Motivational force for donation	Perceived reason for not donating eye	Willingness to donate eye
Present Study	69.5%	45.9%	Empathy for a blind person (62.3%)	Lack of Knowledge (61%)	42.5%
Khalid M. Aloudah et al. (2020)[12]	-	13%	Providing vision to a blind person (47%)	Lack of Knowledge (55%)	26%
Chowdhury et al.(2021)[13]	100%	69%	Eye donation is noble work (81.8%)	Lack of awareness (76.5%)	88.4%
Alzuhairy et al.(2019)[14]	-	11.1%	-	Need more information to decide(37.8%)	33.1%

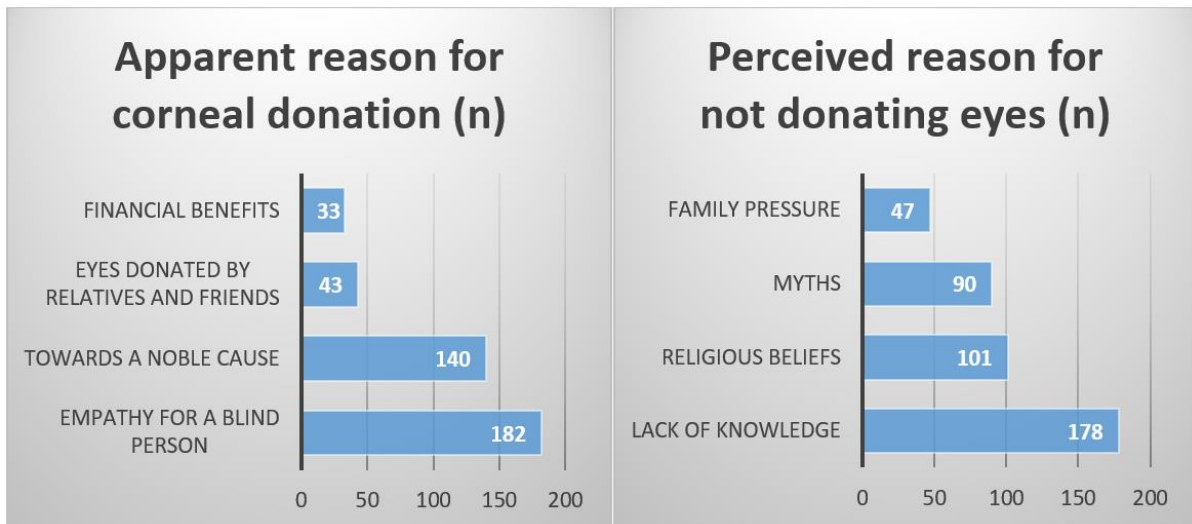


Figure 1

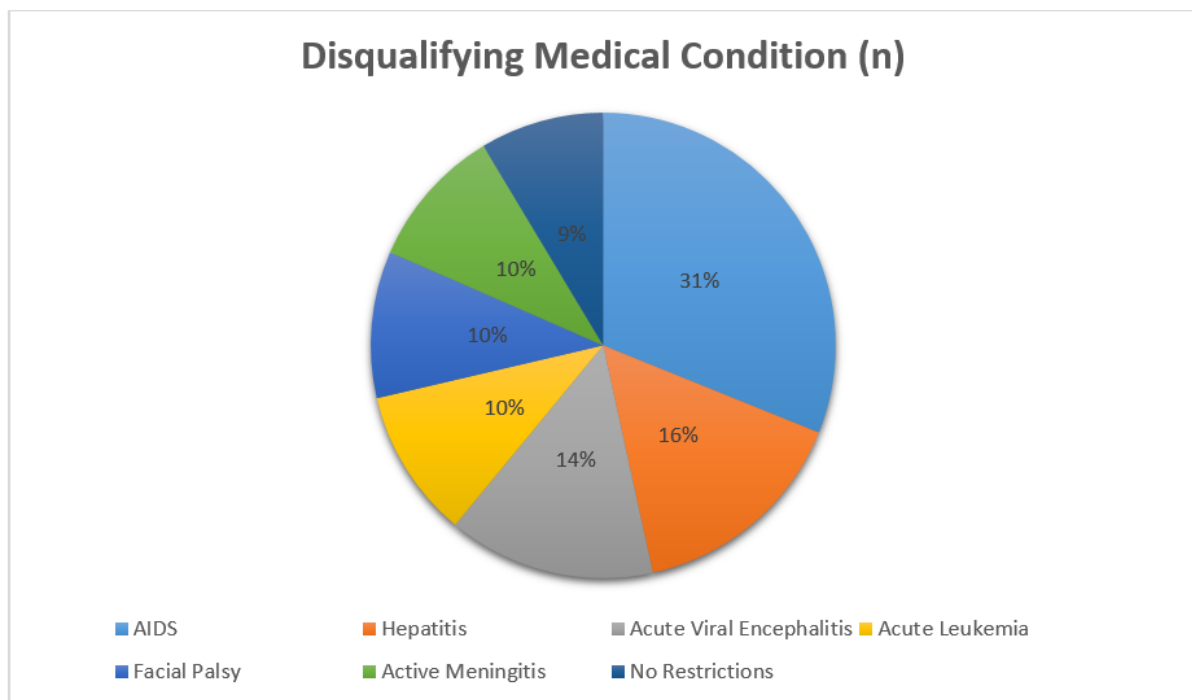


Figure 2

Discussion:

Corneal donation stands out as an exceptionally effective method for restoring sight to individuals afflicted by corneal diseases leading to blindness. Nevertheless, a global shortage of organ donors persists, particularly in developing nations, signifying a low donor rate worldwide, even though it is regarded as a noble cause¹⁵. The current study, with a

mean knowledge score of 2.52 (N=292), highlights a significant deficit in the understanding of medical students in AJK, Pakistan. It becomes evident that this lack of knowledge contributes to a diminished inclination to donate, with 61% of students expressing hesitance due to their unawareness. Hence, healthcare professionals bear the responsibility of formulating strategies to enhance

awareness regarding eye donation within society, thereby augmenting the pool of potential donors¹⁶.

Cultural dynamics and religious beliefs in countries such as Pakistan and Saudi Arabia, among others, pose additional challenges¹⁷. Furthermore, a lack of proper infrastructure and the inadequacy of eye banks present substantial barriers to corneal donation in Pakistan. The current study reveals commendable performance among participants in response to a limited number of questions. For instance, 207 students (70.9%) were aware that they should consult an ophthalmologist in the event of donation, while 134 (45.9%) understood the time frame for eye removal after death is within 2-6 hours. However, only 51 (17.5%) were aware of the duration for which an eye can be preserved. This awareness level is notably lower compared to a similar study where 68.7% displayed knowledge on this topic¹⁸.

Despite efforts to emphasize, through a fatwa, that organ donation is religiously permissible due to its noble nature, 101 students (34.6%) still cite religion as a barrier to eye donation. Culture, religion, and familial pressure appear to be significant impediments to eye donation in developed countries¹⁹. Surprisingly, in our study, only 47 (16.1%) cited familial pressure as a hindrance, a significantly lower percentage than in similar studies among medical students in India, where objections from family were the most frequently cited reason for not pledging corneas¹⁹.

Regarding reasons for willingness to donate eyes, 182 participants (62.3%) expressed empathy for blind individuals, while 140 (47.9%) considered it a noble cause, consistent with a study in northwestern India²⁰. Some also showed willingness due to financial incentives, while others were inspired by family and friends who had previously donated their eyes. This study demonstrates that 203 medical students (69.5%) were aware of eye donation, with 124 (42.5%) expressing an interest in

donating their eyes, closely paralleling a study conducted at Gondar University where the willingness rate was 43.9%²¹. Notably, the main reasons for not donating eyes in our study were a lack of awareness, objections from family members, and religious beliefs.

Furthermore, the study revealed that participants with an awareness of corneal transplants and hailing from educated backgrounds exhibited a greater willingness to donate eyes, mirroring findings from a study conducted in India²². Although this was a single institution-based study, it benefitted from cultural diversity, collecting data from students originating from various regions of Azad Kashmir and Pakistan. However, the level of knowledge was lower than in international studies.

The current study is subject to certain limitations, as it does not establish a reliable correlation between the willingness to pledge eyes, familial education, and knowledge of eye donation. Therefore, we recommend further research with a larger sample size to compare parental education levels and attitudes towards corneal donation. In light of the observed knowledge deficit, healthcare professionals and individuals in medical-related fields should play an instrumental role in developing awareness-raising initiatives and community-oriented programs aimed at enhancing knowledge and understanding of the significance of corneal transplantation. It is imperative to address and dispel self-formed cultural and religious misconceptions that serve as barriers to corneal transplants and to undertake appropriate measures accordingly.

Conclusion:

There is a gap between knowledge and attitude among the students. This implies the need for appropriate and sustained education to raise the attitude and willingness of the students towards corneal donation. There is a need to remove the self-made cultural and religious aspects that have been noticed to cause hindrances in

corneal donation. To promote the awareness and knowledge of corneal donation among medical students, appropriate steps must be taken to foster corneal donations in society and eradicate misconceptions.

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