



UNDERSTANDING THE ORGAN DONATION LANDSCAPE: A STUDY OF MEDICAL STUDENTS' PERSPECTIVES IN PAKISTAN

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ABSTRACT

OBJECTIVES: To assess undergraduate medical students' knowledge, attitude, and practice toward organ donation and to further explore their differences with regard to the students' demographic characteristics. **METHODOLOGY:** A Cross-Sectional Study design was carried out from June through September 2023. The participants were enrolled from the medical, dental, and paramedic colleges of Punjab. The data was collected on a structured questionnaire. The questionnaire was pre-tested prior to the start of the study. The data was collected online and further analyzed on SPSS version 28. All the data was qualitative, so the variables were reported in frequency and percentages. The Chi-square test was applied to see the association within or between study variables and sociodemographic characteristics. **RESULTS:** Overall, 152 students were enrolled in our study. Most of our participants represent the MBBS study program (80%). There was inconsistency in knowledge, attitude, and practice domains. Almost half (55.6%) of the students were aware of organ donation. In contrast, less than half of the students showed a positive attitude toward organ donation (45.5%) with regard to donating under special circumstances. The high percentage of willingness and motivation to become organ donors was reported in the group (below 18 years; 45.5%). The data reflects a high level of comfort and positive feelings about posthumous organ donation among a significant portion of participants. **CONCLUSION:** Our data presents various obstacles and perspectives regarding organ donation. While some participants voiced concerns, such as religious prohibitions, familial objections, and fears of disfigurement or loss of life, others mentioned a variety of "Other" impediments, indicating a broad spectrum of misgivings. However, the majority of respondents demonstrated a clear understanding of the noble purpose of organ donation, with the primary motivation being to save and extend human life. Overall, the findings point to the extent of continued efforts to raise awareness, educate the public, and address concerns to promote organ donation further and save lives.

KEYWORDS: Organ donation, Save life, Organ donor, Organ recipient

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INTRODUCTION

The act of organ donation involves the surgical extraction of an organ or tissue from an individual, referred to as the organ donor, followed by its transplantation into another person, known as the recipient¹. The demand for organ transplants on a global scale has seen a significant growth of 200% in the last ten years. However, the supply of organ donors has remained relatively stable, resulting in a substantial disparity between the number of given organs and the individuals awaiting transplantation^{2,3}.

In Pakistan, an estimated annual mortality rate of around 50,000 individuals has been attributed to organ failure. Pakistan has a significant shortage of kidney and liver transplants, resulting in an annual occurrence of renal failure affecting around 18,000 individuals, while liver failure claims the lives of almost 10,000 individuals³.

In 2020, the United States exhibited the highest proportion of dead organ donors in relation to the whole population, with a ratio of 38.0%⁴. Pakistan is confronted with a deficiency in an adequate system plus an absence of desire among individuals to contribute, resulting in a growing need for organ donation⁵.

The circumstances in Pakistan have resulted in the enactment of a legislative decree in 2007, which permits the use of deceased human bodies for the purpose of organ transplantation^{6,7}. The primary objective of the formation of the Transplantation Society of Pakistan (TSP) was to facilitate the advancement of deceased organ donation via the organization of educational seminars and professional meetings^{8,9}. Nevertheless, despite the efforts mentioned earlier, it is worth noting that a mere 65.5% of the populace in Pakistan is equipped with the necessary understanding and awareness about the subject matter of organ transplantation¹⁰. This underscores the need to recognize and address obstacles to organ donation and formulate efficacious approaches to advocate for its adoption.

There exists a tight relationship between blood donation and organ donation. According to the World Health Organization (WHO), a nation's blood supply is sufficient when 1% of its population donates blood. Nevertheless, based on estimations, the percentage of blood donors in Pakistan's population ranges from 0.46% to 0.78%¹¹. Insufficient and thorough data pertaining to this issue in Pakistan is evident

since just one research has been completed so far. This study focused on examining the knowledge, attitudes, and practices surrounding organ donation among patients inside a tertiary care hospital in Karachi. The findings of this research indicate that a majority of the participants questioned, namely 59.9%, expressed a willingness to donate their organs¹². In light of the limited availability of local literature on this subject matter, our study aims to evaluate the knowledge, attitudes, and behaviors of medical students registered at RLKU Medical College in Pakistan. These students are considered to be the prospective donor population of the nation. Furthermore, our research investigates the many aspects that serve as motivators or deterrents for Pakistani youth when considering their inclination to engage in organ donation.

METHODOLOGY

A Cross-Sectional Study design was completed from June 2023 to September 2023. All the Samples were collected from different medical colleges of various fields of study. The Participant age was divided into three groups and was further stratified into male and female groups. Data was collected from all-year medical students using a comprehensive approach. Upon obtaining ethical approval from the Institutional Review Board (IRB) of RLKU Medical College, informed written consent was sought from each participant. The data was collected using a structured questionnaire adapted from a similar previous study³. An online questionnaire was developed on Google Forms to minimize data collection and entry errors. The questionnaire will consist of three sections:

- a) Socio-demographic Information
- b) Knowledge regarding organ Donation
- c) Attitude regarding organ Donation
- d). Practice (willingness and motivations) to become organ donors.

The Research Supervisor will supervise the data collection process.

The data was analyzed using SPSS version 25. For qualitative data (categorical), frequency and percentage were recorded. The Chi-Square test was employed to compare outcomes between the groups of organ donation and perceived stress, with a significance level set at $P < 0.05$. Stratification was done for effect modifiers/confounders like Age, Gender, and residency, and a post-stratification Chi-Square test was applied, keeping the P value at $P < 0.05$.

Ethical approval was obtained from the Institutional Review Board (IRB) of RLKU Medical College. Before the commencement of the study, informed written consent was obtained from all participants. Participation in the study was voluntary, and students could withdraw at any point without providing a reason. The confidentiality of the participants will be strictly maintained, and the study will not include any identifiable information.

RESULTS

There was a total of 152 participants comprising Undergraduate medical students. Most of the students were enrolled in MBBS (80%), followed by BDS (11%) students, 5% BSN and 4% DPT students. While the majority

of students represented 1st year MBBS (53%), as shown in Table 1.

Table 1 consists of a cross-tabulation of survey results, revealing that 53.9% of females opt to pursue this degree, whereas only 26.3% of males choose the same path. In contrast, the proportion of boys (6.6%) enrolled in the BDS (Bachelor of Dental Surgery) program exceeds that of females (6.6%). Regarding the academic year of study, the data reveals a significant disparity ($P < 0.001$) between the male and female populations with regard to organ donation.

Table 1: Sociodemographic Characteristics

Question		Total	Female n (%)	Male n (%)	P Value n (%)
Profession of Study	MMBS	122	82	40	0.648
	BDS	(80.26%)	(53.9%)	(26.3%)	
	DPT	16	10	06	
	BSN	(10.52%)	(6.6%)	(3.9%)	
		06 (3.95)	04	02	
	08	(2.6%)	(1.3%)		
		(5.26%)	07	01	
			(4.6%)	(0.7%)	
Year of Study	1 st Year	81	62	19	0.001
	2 nd Year	(53.29%)	(40.8%)	(12.5%)	
	3 rd Year	27	22	05	
	4 th Year	(17.76%)	(14.5%)	(3.3%)	
	5 th Year	19	09	10	
		((12.50%)	(5.9%)	(6.6%)	
		0 (0%)	0 (0%)	0 (0%)	
	25	10	15		
		(16.45%)	(6.6%)	(9.9%)	

Table 2: knowledge regarding organ donation

As shown in Table 2, most females (76.8%) and males (32.8%) know that organs can be donated to save another person's life. However, there is a significant difference between the two groups, with females showing higher awareness.

The majority of participants were from the 1st year of the study program (53.29%), with 77% female students, followed by 13% male students. Overall, there was a statistically significant difference ($P < 0.01$) in study participants' sociodemographic characteristics, such as the profession of the study and years of the study.

Among females, (40.1%) reported that they heard about organ donation through the media, and males are (20.4%). Nevertheless, there is no significant association by gender. The majority of respondents do not have family members or friends who have donated organs. There is no significant difference between the two groups. When it comes to views on organ donation, there is no significant difference by gender. Most respondents expressed support or strong support for organ donation, with a few participants reporting neither supporting nor opposing it and a few opposing or strongly

Question	Responses n (%)	Female n (%)	Male n (%)	P value
Are you aware that organs can be donated to save another person's life?	Yes	103 (76.8%)	48 (32.8%)	0.146
	No	0 (0%)	1 (2.0%)	
How did you hear about organ donation?	Media	61 (40.1%)	31 (20.4%)	0.953
	Friends of friends	18 (11.8%)	7 (4.6%)	
	Health care staff	19 (12.5%)	9 (5.9%)	
	NGO or organ Donation program	5 (3.3%)	2 (1.3%)	
Has anyone in your family or friend circle ever donated an organ?	yes	22 (14.5%)	11 (7.2%)	0.974
	No	65 (42.8%)	31 (20.4%)	
	Don't know	16 (10.5%)	7 (15.1)	
Which of these statements best describes your views on organ donation? It doesn't matter if you would donate your own organs or not, we just want to know how you feel about organ donation.	I strongly support organ donation	26 (17.1%)	16 (10.5%)	0.572
	I support organ donation	60 (39.5%)	27 (17.8%)	
	I neither support nor oppose	17 (11.2%)	6 (3.9%)	
	I oppose organ donation	0 (0%)	0 (0%)	
	I strongly oppose organ donation	0 (0%)	0 (0%)	

When can your organs be donated	During life	06 (3.9%)	09 (5.9%)	0.001
	After death	15 (9.9%)	15 (9.9%)	
	Both	82 (53.9%)	25 (16.4%)	

Question	Responses	Total	Female	Male	P Value
Express your attitude toward the possibility of your organ being used for donation	I definitely want to Never considered Will think about it donate under special circumstances	25 (16.45%) 33 (21.71%) 41 (26.97%) 53 (34.87%)	16 (10.5%) 12 (7.9%) 28 (18.4%) 47 (30.9%)	09 (5.9%) 11 (7.2%) 13 (8.6%) 06 (10.5%)	0.253
what do you think is there any age limit to donate your organ?	Yes, definitely Yes, maybe No, I don't think so Don't know	60 (39.47%) 49 (32.24%) 30 (19.74%) 13 (8.55%)	42 (27.6%) 30 (19.7%) 22 (14.5%) 09 (5.9%)	18 (11.8%) 19 (12.5%) 08 (5.3%) 04 (2.6%)	0.674
How comfortable are you with the idea of donating your organs after death?	Very comfortable Quite comfortable Neither comfortable nor uncomfortable Quite uncomfortable Very uncomfortable Don't know	27 (17.76%) 37 (24.34%) 45 (29.61%) 18 (11.84%) 6 (3.95%) 19 (12.50%)	15 (9.9%) 29 (19.1%) 29 (19.1%) 13 (8.8%) 03 (2.0%) 14 (9.2%)	12 (7.9%) 08 (5.3%) 16 (10.5%) 05 (3.3%) 03 (2.0%) 05 (3.3%)	0.379
Which of the following best describes how you personally feel about organ donation?	I definitely want to donate all of my organs after death if possible I definitely want to donate some of my organs after death if possible I would consider donating all of my organs after death I would consider donating some of my organs after death I don't know if I want to donate my organs after death I definitely don't want to donate my organs after death	21 (13.82%) 19 (12.50%) 17 (11.18%) 32 (21.05%) 52 (34.21%) 11 (7.24%)	10 (6.6%) 14 (9.2%) 11 (7.2%) 23 (15.1%) 37 (24.3%) 8 (5.3%)	11 (7.2%) 05 (3.3%) 06 (3.9%) 09 (5.9%) 15 (9.9%) 03 (2.0%)	0.425
Have you ever talked with anyone about organ donation?	Yes No Never thought about this	53 (34.37%) 76 (50.00%) 23 (15.13%)	37 (24.3%) 49 (32.2%) 17 (11.2%)	16 (10.5%) 27 (17.8%) 06 (3.9%)	0.645
Which of the organ you have heard most about donation	Liver Kidney Cornea Others Don't know	24 (15.79%) 116 (76.32%) 04 (2.63%) 03 (1.97%) 05 (3.29%)	14 (9.2%) 84 (55.3%) 01 (0.7%) 01 (0.7%) 03 (2.0%)	10 (6.6%) 32 (21.1%) 03 (2.0%) 02 (1.3%) 02 (1.3%)	0.124
Q12: Would you be willing to donate if your family members or friend need an organ?	Yes, why not May be, not sure No, definitely not	73 (48.03%) 74 (48.68%) 05 (3.28%)	49 (32.2%) 51 (33.3%) 3 (2.0%)	24 (15.8%) 23 (15.1%) 02 (1.3%)	0.906
Do you feel that organs that are donated may be misused or abused?	Sometimes Never All the time Don't know	97 (63.82%) 16 (10.53%) 17 (11.18%) 22 (14.47%)	67 (44.1%) 09 (5.9%) 10 (6.6%) 17 (11.2%)	30 (19.7%) 07 (4.6%) 07 (4.6%) 05 (3.3%)	.461

opposing organ donation. There is a significant difference in knowledge about when organs can be donated between females and males. A higher percentage of females correctly know

Table 3 shows the data indicates a predominantly favorable disposition towards the act of organ donation, as seen by a substantial proportion (30.9%) expressing their willingness to donate in specific scenarios. Nevertheless, it is worth noting that a significant proportion (18.4%) of individuals will contemplate the matter, demonstrating a certain degree of thoughtful deliberation. In relation to age limitations for organ donation, a

that organs can be donated both during life and after death, while more males believe it can only happen after death

notable proportion (27.6%) of individuals hold the belief that there could potentially exist age-based restrictions. Furthermore, a percentage of 19.7% expresses uncertainty on this matter, indicating a degree of ambiguity within the public's perception. In regards to the level of comfort individuals has with posthumous organ donation, a significant proportion, including 19.1%, express a high level of comfort. At the same time, an equal percentage also indicates a considerable degree of comfort, thereby

indicating a prevailing positive feeling. On individuals' sentiments on organ donation, there exists a relatively even distribution, wherein confident respondents exhibit a willingness to contribute a portion or the entirety of their organs posthumously. In contrast, others maintain uncertainty or reluctance towards embracing this concept. Significantly, a considerable proportion (32.2%) of individuals have engaged in conversations pertaining to organ donation, indicating a certain degree of understanding and involvement with the subject matter. The research further reveals that a significant proportion (55.3%) of respondents had primarily been exposed to information regarding kidney donation, indicating a

heightened emphasis on raising awareness about kidney donation in comparison to other organ types. In the context of donating to family or friends, there exists a somewhat equal distribution between individuals who express willingness to contemplate such an act (33.3%) and those who remain undecided (33.3%). A notable proportion (44.1%) of participants hold the belief that given organs could be subject to misuse or abuse, hence underscoring the importance of fostering trust and providing educational initiatives on organ donation protocols.

Table 3: Participants' willingness and Motivations towards organ donation

Question	Response	Total	Female	Male	P Value
What are the barriers for you to donate your organs	You think it is religiously prohibited	37 (24.34%)	16 (10.5%)	11 (7.2%)	0.005
	Family objection	24 (15.79%)	12 (7.9%)	12 (7.9%)	
	Disfigurement of your body	13 (8.55%)	06 (3.9%)	07 (8.6%)	
	You fear the loss of your life	42 (27.63%)	29 (19.1%)	13 (8.6%)	
	Others	46 (30.26%)	40 (26.3%)	06 (3.9%)	
Why do you think organ donation is done?	To save someone's life	140 (92.11%)	97 (63.8%)	43 (28.3%)	0.194
	For empathy	07 (4.61%)	03 (2.0%)	04 (2.6%)	
	For Money	03 (1.97%)	01 (0.7%)	02 (1.3%)	
	Another reason	02 (1.32%)	02 (1.3%)	0 (0%)	
Do you think you need more knowledge about this topic?	Yes	103 (67.76%)	72 (47.4%)	31 (20.4%)	0.325
	No	14 (9.21%)	07 (4.6%)	07 (4.6%)	
	Maybe	35 (23.03%)	24 (15.8%)	11 (7.2%)	
If yes, then from which source would you prefer to get knowledge from	Doctor /health care staff	105 (69.08%)	71 (46.7%)	34 (22.4%)	0.509
	Friends/family	15 (9.87%)	09 (5.9%)	06 (3.9%)	
	Social media	28 (18.42%)	19 (12.5%)	09 (5.9%)	
	Newspaper	04 (2.63%)	04 (2.6%)	0 (0%)	
	SMS	0 (0%)	0 (0%)	0 (0%)	

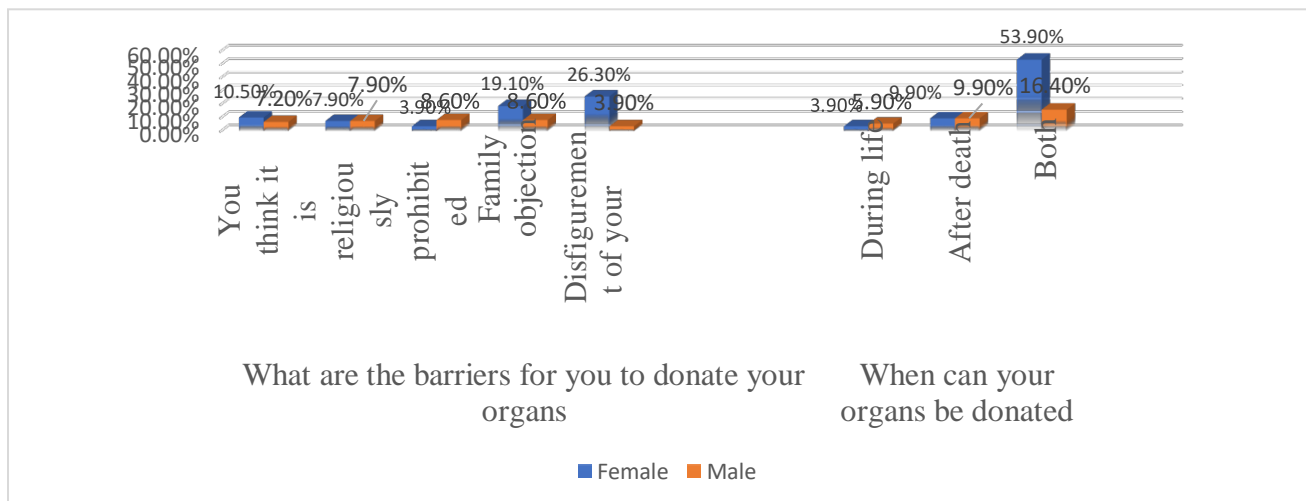
Table 3 shows the data presents a range of obstacles and perspectives pertaining to the practice of organ donation. A significant proportion of participants voiced apprehensions, with 10.5% indicating religious prohibitions on organ donation, 7.9% encountering familial objections, 3.9% expressing concerns about disfigurement, and 19.1% harboring anxieties regarding potential hazards to their well-being. Furthermore, a significant proportion of respondents (26.3%) identified "Other" impediments, suggesting a

wide range of misgivings. Conversely, a significant level of consciousness exists regarding the underlying objective of organ donation, as indicated by 63.8% of individuals identifying it as a mechanism to save and extend human life. In comparison, 28.3% acknowledge its empathetic dimension—very few (0.7%) perceived organ donation as motivated by monetary gain. Approximately 47.4% of the participants expressed a desire for additional knowledge regarding the subject matter. Most of these individuals preferred

obtaining information from medical professionals or healthcare personnel (46.7%), while a smaller proportion mentioned relying on friends or family members (22.4%). As mentioned earlier, the findings underscore the significance of effectively resolving concerns,

offering unambiguous information, and bolstering public education efforts to promote organ donation.

Figure 1: Barriers to organ donation by gender



The data suggests variations in organ donation beliefs and concerns across different years of study. First-year students exhibit higher concerns about religious prohibitions, fear of the loss of life, and other reasons, while fifth-year students seem to have a greater awareness of both during-life and post-mortem organ donation options.

DISCUSSION

There was a total of 152 participants comprising Undergraduate medical students. The sociodemographic characteristics of this study, such as gender, profession of study, and year of study, reveal discernible patterns of significance. Most of the students were enrolled in the MBBS study program (80%), and 77% of the participants were females. The data showed that there is a notable disparity between genders in the field of education, specifically in the pursuit of MMBS (Bachelor of Medicine, Bachelor of Surgery). Regarding the academic year of study, the data reveals a statistically significant disparity ($P < 0.001$) between the male and female populations with regard to organ donation. The predominance of female respondents (68%) is similar to the pattern observed in two studies, reflecting more females undertaking medical education than males in the subcontinent¹³⁻¹⁴.

We found variations in organ donation beliefs and concerns across different years of study. First-year students exhibit higher concerns

about religious prohibitions, fear of the loss of life, and other reasons, while fifth-year students seem to have a greater awareness of both during-life and post-mortem organ donation options. This information could be useful for tailoring educational programs and interventions to address specific concerns and raise awareness about organ donation at different stages of medical education.¹⁵

Notably, very few perceived organ donations as being motivated by monetary gain. The data also reveals a substantial portion of participants who expressed a desire for more knowledge on the subject, with a preference for obtaining information from healthcare professionals or trusted social circles. In light of these findings, it becomes evident that addressing concerns, providing clear communication, and enhancing public education efforts are crucial steps toward promoting and increasing organ donation rates^{9, 11}. This could save more lives and foster greater empathy within society. A comprehensive overview of the public's attitudes and perceptions toward organ donation. It indicates a generally favorable disposition towards organ donation, with a substantial portion of respondents willing to consider it, especially in specific scenarios. The data reflects a high level of comfort and positive feelings about posthumous organ donation among a significant portion of participants, further emphasizing the potential for organ donation awareness and promotion. However, the

research also highlights areas of concern and uncertainty, notably the belief in potential age-based restrictions on organ donation and some level of ambiguity in the public's perception of this matter¹⁶.

Furthermore, the data shows that a significant proportion of respondents have discussed organ donation, underscoring an ongoing dialogue and engagement with this critical topic¹⁷. The predominance of information regarding kidney donation suggests a need for a more balanced approach to promoting awareness of various organ types to ensure a well-rounded understanding of organ donation. The data's revelation that a notable percentage of individuals believe organs could be subject to misuse or abuse emphasizes the importance of trust-building and educational initiatives regarding organ donation practices¹⁸.

CONCLUSION

Our data presents a diverse range of obstacles and perspectives regarding organ donation. While some participants voiced concerns, such as religious prohibitions, familial objections, and fears of disfigurement or loss of life, others mentioned a variety of "Other" impediments, indicating a broad spectrum of misgivings. However, the majority of respondents demonstrated a clear understanding of the noble purpose of organ donation, with the primary motivation being to save and extend human life. This is reinforced by the acknowledgment of its empathetic dimension by a significant proportion of participants. Overall, the findings point to the extent of continued efforts to raise awareness, educate the public, and address concerns to promote organ donation further and save lives.

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