

ORIGINAL ARTICLE

Organ Donation and Transplantation: Public Awareness and Willingness in Karachi Pakistan

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ABSTRACT

Background: High prevalence of chronic diseases is leading to increased number of “end organ damage”. The one and only effective treatment is to replace nonfunctional organs with functional ones, donated by live or dead donors. In Pakistan, like global scenario, large numbers of patients are waiting in the queue to receive organs from donors because of increased organ failures. This study investigated the people awareness and response regarding organ transplantation.

Objectives:

- 1 To find the causes of deficient organ donation.
- 2 To explore ways for providing correct information, which can increase the supply of donated organs.

Method: Cross sectional study conducted on a sample size of 402 adults selected from general population of Karachi. Study was done from 28th June, 2022 to 1st December 2022. Analysis of data was done on SPSS version 23.

Results: Among 402 participants, awareness about organ donation and transplantation was found in 384 (95%). Cadaveric organ donation awareness was in 53%. The source of information was Internet / social media. Knowledge of OD from Educational Literature in males 28 (20%) in females 44 (18%). Television males 37 (27%), females 32 (13%).

Conclusion: Willingness to donate is dependent on knowledge of different aspects like law, religion, trading of organs and opinion of family members. Health education is needed as a part of MBBS, curriculum Misunderstandings and misconceptions are to be cleared through media campaign.

Keywords: Organ transplantation, Organ donation, Organ failure, Organ recipient, Cadaveric.

INTRODUCTION

Organ transplantation is the only treatment for end organ damage in many patients to save their lives¹ Organ donation is a process by which one person permits an organ of own taken out for transplantation in another person. Worldwide in the waiting list to receive organ, is added another person every 15 min² In the United States, over 100,000 people are on the waiting list to receive an organ³. In general donation and transplantation procedures are done more in Europe than on other continents⁴. Transplanting healthy organs in patients with end organ damage is very important, still there is increasing disagreement for it⁵ “In Spain, everyone is an organ donor after their death unless they have expressed the opposite during their lifetime.”⁶ In Ethiopia, between 130 and 150 corneas are saved yearly.⁷ However, there are above three hundred thousand unsighted candidates want cornea for transplantation⁷ Encouraging the donations from dead persons is a must to improve number of insufficient donations⁸ However in Syria most of organs are given by alive donors’ majority family members⁸. Educating health experts on how they can efficiently communicate to the relatives of donors is already implemented in UK, Spain and Australia⁹ “The current identification and referral rate for potential DBD donors is 99%.”¹⁰ Although worldwide transplantations can save life of thousands of people, various factors such as health, law, societal, social, and sensitivities which make organ replacements difficult¹¹. Overall organ shortage relative to the increasing demand is a global problem.¹² In January 2021, there were more than 108,000 patients waiting for organs¹³ Over 90,000 of those individuals needed kidney replacement. Almost 3500 were waiting heart transplant and over 950 required lung relocation¹³ In Canada also the number of patients waiting for transplantation exceeds the available organs¹⁴ Research conducted in past show that number of organs donated depend on the problems related to health system and social aspects of community¹⁵ In the medical history of Pakistan a deceased, 31year old Uzair bin Yasin from Rawalpindi, donated all his organs after death which were effectively transplanted into seven patients.^[16]

Organ transplantation data in Pakistan is not available but this has been estimated that more than 50000 patient die because of end organ failure without getting organ for transplantation¹⁷ The World Health Organization Global Observatory on Donation and Transplantation estimates that there were over 146,000 organs transplanted in 2018 worldwide. This gift of life came from the generosity of over 40,000 living donors and nearly 39,000 deceased organ donors¹⁸ Organ shortage is a major public health issue. In 2020, 39,000 organs were transplanted in the United States, while 107,000 patients were on organ donation waiting lists¹⁹

Objective of Study: To evaluate understanding, practices and willingness of general population of Karachi regarding organ donation.

METHODOLOGY

This cross-sectional study was carried out among 21-60 years of adults, residents of Karachi.

Sample of 403 was selected by convenient sampling with 95% confidence interval.

Participants were reflecting different beliefs, ethnicities, languages, socio economic background. Information was collected using face to face interviews based on a structured, pretested questionnaire. Approval was taken from the ethical committee of United Medical and Dental College vide letter UMDC/Ethics/2022 /27/05/308. Written informed consent was taken from all participants. All data collected was coded by the serial numbers for confidentiality.

Statistical Analysis: Data entry and analysis was done with SPSS version 23. All variables were qualitative and were presented with frequency and percentage. Awareness and knowledge of study participants was compared with different characteristics of study participants with the help of Chi Square test. p-value <0.05 was considered statistically significant.

RESULTS

This study was conducted on 403 adults. There were 144 (36%) males and 259 (64%) females. Among 403 respondents (figure 1),

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maximum 40% of them had age 21-30 years and 24% aged 31-40 years which shows that 64% (figure 2) of our sample population were young. Among all subjects, 193 were Urdu speaking by ethnicity followed by 73 Punjabi speaking, 55 Sindhi speaking, 20 Pushto, 26 Saraiki, 7 Bulloch, 7 Kashmiri, and 23 others. Religion wise Muslims were 387, Hindus 3, Christians 10 and Buddhist 3. Among understudy subjects, students were 51, employed 245, unemployed 44, housewives 35, self-employed 21 and retired 7. According to education, illiterate were 26, school education 176, Intermediate 21, graduate 115 and postgraduate were 66.

Respondents who thought transplantation is legal were 286(71%) and those who thought organ transplantation is an effective way of treatment were 269 (67%). Participants who wanted to donate their organs during their lifetime were 14% and those who wanted to donate after their death were 26%. We had two types of respondents, one having a medical background like doctors, nurses, physiotherapist, medical technicians, laboratory workers etc. n=83 (20.59%) and the other one didn't have any background related to the medical field n=320 (79.40%). Participants related to medical field were informed 74(89%) about legality of organ transplantation. Whereas 49 (59%) participants with medical background showed concerns about organ donation being modified into the trade while 176 (55%) of nonmedical background respondents had shown concern about organ trade.

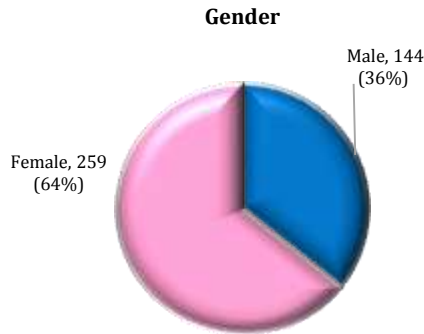


Fig 1: Gender distribution of respondents

Table 1: Gender wise comparison of knowledge and awareness about organ donation and transplantation

		Total	Male	Female	P-value (Chi Square)
Do you know about organ donation and transplantation?	Yes	384 (95%)	138 (96%)	246 (95%)	0.70
	No	19 (5%)	6 (4%)	13 (5%)	
Do you know about organ donation during life?	Yes	287 (71%)	99(69%)	188 (73%)	0.16
	No	85 (21%)	29 (20%)	56(22%)	
	don't know	31 (8%)	16 (11%)	15 (6%)	
Do you know an organ can be utilized from a person after his death?	Yes	330 (82%)	110 (76%)	220 (85%)	0.10
	No	38 (9%)	17 (12%)	21 (8%)	
	Not sure	35 (9%)	17 (12%)	18 (7%)	
Do you know about cadaveric organ donation?	Yes	215 (53%)	50 (35%)	165(64%)	.000*
	No	155 (39%)	82 (57%)	73 (28%)	
	don't know	33 (8%)	12 (8%)	21 (8%)	
Are you aware of cadaveric transplant	Yes	202 (50%)	42 (29%)	160 (62%)	.000*
	No	126 (31%)	68 (47%)	58 (22%)	
	don't know	75 (19%)	34 (24%)	41 (16%)	
In your opinion is transplantation is an effective way of treatment?	Yes	269 (67%)	76 (53%)	193 (75%)	.000*
	No	40 (10%)	21 (15%)	19 (7%)	
	Not sure	94 (23%)	47 (33%)	47 (18%)	
What is your awareness of respondents for a donation of organ during life.	None or limited	161 (40%)	67 (47%)	94 (36%)	.000*
	Moderate	130 (32%)	46 (32%)	84 (32%)	
	Significant	50 (12%)	4 (3%)	46 (18%)	
	Not sure	62 (15%)	27 (19%)	35 (14%)	

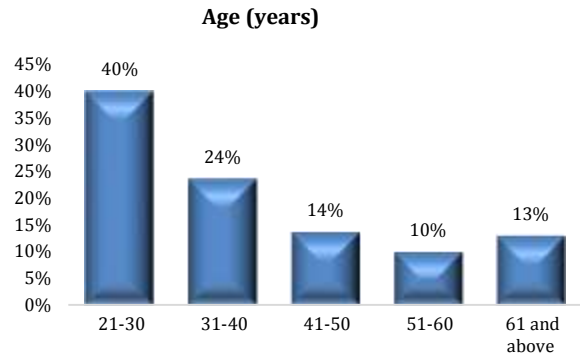


Fig 2: Age distribution of participants.

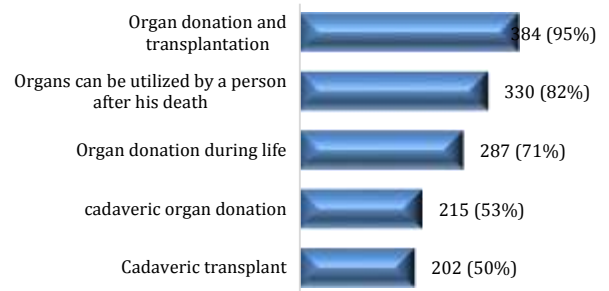


Fig 3: Knowledge and awareness about organ donation and transplantation

Table 2: Association of willingness of organ donation with opinion about transplantation treatment

		Gender wise			ChiSquare	Background wise		(ChiSquare) P-value
		Total	Male	Female		Medical Background	Non Medical Background	
Do you want to donate your organs after death?	Yes	105 (26%)	40 (28%)	65 (25%)	0.05	25 (30%)	80 (25%)	0.51
	No	171 (42%)	50 (35%)	121 (47%)		31 (37%)	140 (44%)	
	Not sure	127 (32%)	54 (38%)	73 (28%)		27 (33%)	100 (31%)	
Do you want to donate your organs during lifetime?	Yes	56 (14%)	15 (10%)	41 (16%)	.012*	6 (7%)	50 (16%)	.000*
	No	200 (50%)	63 (44%)	137 (53%)		28 (34%)	172 (54%)	
	Not sure	147 (37%)	66 (46%)	81 (31%)		49 (59%)	98 (31%)	
Do you want to convince people for organ donation?	Yes	160 (40%)	41 (29%)	119 (46%)	.001*	40 (48%)	120 (38%)	.002*
	No	94 (23%)	44 (31%)	50 (19%)		7 (8%)	87 (27%)	
	Not sure	149 (37%)	59 (41%)	90 (35%)		36 (43%)	113 (35%)	

		In your opinion is transplantation is an effective way of treatment?			Chi Sq. pvalue
		Yes	No	Not sure	
Do you want to donate your organs after death?	Yes	88 (33%)		17 (18%)	<0.001
	No	102 (38%)	30 (75%)	39 (41%)	
	Not sure	79 (29%)	10 (25%)	38 (40%)	
Do you want to donate your organs during lifetime?	Yes	47 (17%)	3 (8%)	6 (6%)	<0.001
	No	120 (45%)	31 (78%)	49 (52%)	
	Not sure	102 (38%)	6 (15%)	39 (41%)	
Do you want to convince people for organ donation?	Yes	146 (54%)		14 (15%)	<0.001
	No	43 (16%)	30 (75%)	21 (22%)	
	Not sure	80 (30%)	10 (25%)	59 (63%)	

Table 3: Association of willingness of organ donation with awareness of respondents for donation of organ during life & with knowledge about laws regarding organ transplantation

		What is your awareness of respondents for donation of organ during life.				Chi Sq. Pvalue
		None or limited	Moderate	Significant	Not sure	
What is your awareness of respondents for donation of organ during life.						
Do you want to donate your organs after death?	Yes	27 (17%)	40 (31%)	23 (46%)	15 (24%)	<0.001
	No	98 (61%)	47 (36%)	7 (14%)	19 (31%)	
	Not sure	36 (22%)	43 (33%)	20 (40%)	28 (45%)	
Do you want to donate your organs during lifetime?	Yes	15 (9%)	18 (14%)	19 (38%)	4 (6%)	<0.001
	No	99 (61%)	62 (48%)	21 (42%)	18 (29%)	
	Not sure	47 (29%)	50 (38%)	10 (20%)	40 (65%)	
Do you want to convince people for organ donation?	Yes	28 (17%)	69 (53%)	43 (86%)	20 (32%)	<0.001
	No	73 (45%)	17 (13%)	0 (0%)	4 (6%)	
	Not sure	60 (37%)	44 (34%)	7 (14%)	38 (61%)	
Do you have knowledge about laws regarding organ transplantation?						
Do you want to donate your organs after death?	Yes	44 (23%)	38 (37%)	14 (64%)	9 (10%)	<0.001
	No	99 (52%)	30 (29%)	5 (23%)	37 (42%)	
	Not sure	46 (24%)	36 (35%)	3 (14%)	42 (48%)	
Do you want to donate your organs during lifetime?	Yes	27 (14%)	21 (20%)	5 (23%)	3 (3%)	<0.001
	No	102 (54%)	34 (33%)	14 (64%)	50 (57%)	
	Not sure	60 (32%)	49 (47%)	3 (14%)	35 (40%)	
Do you want to convince people for organ donation?	Yes	61 (32%)	60 (58%)	20 (91%)	19 (22%)	<0.001
	No	67 (35%)	11 (11%)	0 (0%)	16 (18%)	
	Not sure	61 (32%)	33 (32%)	2 (9%)	53 (60%)	

According to table 1 there were not any significant differences between male and female awareness related to organ donation and transplantation. There is knowledge about utilized organs after death 85% among female is higher than male (76%) but it was not significant as well ($P>0.05$). Similarly, knowledge about organ donation during life high in female (73%) as compared to Male (69%) it's also not significant. While Cadaveric organ donation awareness and transplantations is significantly high among female (64%) with respect to male (35%).

Medical Background respondents 25 (30%) wanted to donate organ after death with a slight difference (table 2) among non-medical respondents n=80 (25%).

According to table 1 there were not any significant differences between male and female awareness related to organ donation and transplantation. There is knowledge about utilized organs after death 85% among female is higher than male (76%) but it was not significant as well ($P>0.05$). Similarly, knowledge about organ donation during life high in female (73%) as compared to Male (69%) it's also not significant. While Cadaveric organ donation awareness and transplantations is significantly high among female (64%) with respect to male (35%).

Medical Background respondents 25 (30%) wanted to donate organ after death with a slight difference (table 2) among medical non-medical respondents n=80 (25%).

According to table 2 and 3, association of willingness of organ donation with awareness and knowledge of organ donation, all these tables result showing that organ donation willingness is directly associated with awareness and complete knowledge of transplantation treatment and law about it. If they have knowledge that is an effective way of treatment then they willing to donate organ donation during life as well as after death, if they don't have knowledge and opinion that it is an effective way they don't want to donate organ donation after death (75%) and during life (78%).

Similarly, table 3 shows that willingness to donate organ donation during life is high among those who have significant awareness (38%) as compared to moderate awareness (14%) and limited awareness (9%). That shows that when level of awareness increases the willingness also increases in both cases during life and after death also convincing rate.

Also, table 3 shows that willingness to donate organ donation during life is directly associated with level of knowledge about laws regarding organ transplantation, it is high among those who have significant Knowledge (64% & 23%) as compared to

moderate (37% & 20%) and limited awareness (23% & 14%). That shows that when level of awareness increases the willingness also increases in both cases during life and after death. Also, we observed that 91% of significant knowledge people want to convince others for organ donation. The people who have moderate knowledge of laws 58% of them wanted to convince other while its very low 32% among limited knowledge people. Our results show the source of information was Internet / Social media males 55(40%) females 116 (47%). Source of awareness was from Educational Literature males 28 (20%), females 44 (18%), from Television (males 37 (27%), females 32 (13%), Friends (males 8 (6%), females 8 (3%), Family (males 3 (2%) females 8 (3%). Newspaper males 7(5%) females 3 (1%). Religious circle total 8 (2%). Seminar males 4(3%) females 3(1%). Radio total 4 (1%). Don't remember males 3 (2%) females 16 (7%).

DISCUSSION

Awareness about organ donation and transplantation in this study was found among 384 (95%) subjects. Awareness of organ donation during lifetime was 71%, while the awareness of utilization of organs after the death was in 82%. Research conducted by Balajee and coworkers pointed 90% of participants were aware about organ donation during life as well after death²⁰ Same Indian study revealed 70% subjects were ready to donate their organs after death and 78% were willing to donate their relative's organs after their death²⁰ In another study 79.17 % participants were fully ,16.67 % partly and 15 unaware²¹ In another study conducted in Saudi Arabia, participants had a reasonable 48% awareness of organ donation²²

Our study showed no significant differences between male and female awareness related to organ donation and transplantation. As in our study, another research

Showed no significant difference between men and women in readiness to give organs after demise. Result showed no meaningful difference, $p = 0.533$. Similarly, there were no major variation showed in the acceptance of organ donation based on scholastic rank ($p = 0.382$) and age groups ($p = 0.059$). [8] Research conducted by Farah Khalid and coworkers in Karachi revealed 131(73.6%) males had inadequate knowledge, 47 (26.4%) had adequate knowledge of organ donation, 162 (74.7 %) females had inadequate, while 55(25.3%) had adequate knowledge about organ donation.[23] There was knowledge about, utilization of organs after death (85%) in females which was higher than males(76%) but it was not significant as well ($P > 0.05$)²³ In our study knowledge of females about organ donation during life was high (73%) as compared to males (69%) while awareness of cadaveric organ donation and transplantations was significantly high among females (64%) with respect to male (35%). Males (28%) want to donate organ after their death more than females (25%) which is significantly different. But it reverses more in female (16%) want to donate organs during life as compared to male (10%) it's also a significant difference among both. According to the National Organ and Tissue Transplant Organization (NOTTO) 2021 report, India has a significant gender disproportionality: in men there are more organ receivers 80%, whereas 79% women were donating organs[24] Among the participants who refused to donate their organs, family refusal 57% was the most common reason.[20] While convincing people regarding organ donation was significantly high among females ($P < 0.05$) in our study and organ willingness was directly associated with awareness and complete knowledge of transplantation treatment and laws about it. If they have knowledge that organ donation is an effective way of treatment then they are willing to donate organ during life as well as after death, if they don't have knowledge that it is an effective way they don't want to donate organ donation after death (75%) and during life (78%) shows that willingness to donate. organ donation during life is high among those who have significant awareness (38%) as compared to moderate awareness (14%) and limited awareness (9%). When level of awareness increases the willingness also increase in both cases during life and after death also convincing rate. Willingness to donate organ during life was

directly associated with level of knowledge about laws regarding organ transplantation, it is high among those who have significant Knowledge of OD (64% & 23%) as compared to moderate Knowledge of OD (37% & 20%) and limited awareness (23% & 14%). It shows that when level of awareness increases the willingness also increases in both cases during life and after death. Also, we observed that 91% of people with significant knowledge want to convince others to organ donation. Among the people who have moderate knowledge of laws 58% wanted to convince others, while its very low 32% among people not having knowledge. Male gender and educational attainment were significantly associated with willingness to donate⁹

is a lack of information regarding the rules and regulations governing organ donation One survey found that there absence of knowledge about the strategies and policies administering organ donation.⁴ Same as in our study, in another source of information was mainly internet or television, radio, broadcasting etc¹⁹

In another study media (Television) was major source of information²⁰. Study conducted by Somaili et al, media has effectively given knowledge regarding organ donation and transplantation²¹ One study of India shows participants with educational status above high school had better knowledge of organ donation than those who have lesser educational qualification ($P = 0.001$). [11] The EKHA "Gift of life" movement of encouraging proposals guidance to program producers and society on methods to organizing organ donation²⁵ Training of scholars at the high school and college levels is important on this subject¹³ Amongst main reasons that should be addressed to learners should be correction of wrong believes and improper knowledge about organ donation¹³ Rufus Olusola Akinyemi et al. in their research found that more men were willing to contribute their organs for transplantation than women (AOR=2.10; 95% CI=1.313.35)²⁶ It was also found in same study that people with low education had less acceptance of donating their body parts in than with high education (AOR=0.14; CI=0.03 - 0.65)²⁶ Our study- participants (59%) with background of medicine had fears about organ donation being modified into the trade while (55%) of participants with nonmedical background have worries about it. In our study participants Medical Background 25 (30%) want to donate organ after death more than nonmedical participants (25%) and it was not significant difference among male and female. But it reverses more nonmedical (16%) want to donate organs during life as compared to Medical Background (7%) and it is significant difference among both. The attitude of our participants was greatly influenced by knowledge of organ donation and transplantation, as they mentioned. We consider that limitation of this study is that this study is only conducted in Karachi, similar study should be conducted in other cities with larger population.

CONCLUSION

This study reveals good awareness of organ donation and transplantation (95%) among participants. Although there are few concerns in terms of its legality (71%), religious understanding, fear of not going with complete body parts, family disapproval etc.

More studies should be carried out regarding the acceptance of organ donation. Health authorities are also requested to facilitate communities through media and other means regarding health education on organ donation and transplantation.

Study Limitations: Our participants were only from Karachi, not representative of whole population.

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