

Assessment of Awareness Level regarding Organ Donation among Healthcare Professionals and Students in India

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ABSTRACT

Introduction: Organ donation can be a life-saving opportunity for patients with severe organ failure. In India, the rate of organ donation of the deceased Indian population is exceptionally low. This necessitates enhancing awareness regarding organ donation among health care professionals and students, which can motivate the general population.

Aim: To assess and analyze the awareness level of healthcare professionals and students on organ donation in order to suggest potential strategies regarding improvement of awareness and willingness towards organ donation.

Materials and methods: A cross-sectional online and offline survey was conducted at the national level between July 2022 and September 2022. Indian healthcare professionals as well as students of various fraternities were included. The Snowball sampling technique was used for data collection. Statistical analysis was undertaken using the statistical package for the social sciences (SPSS) software, version 25.

Results: A total of 1303 respondents were enrolled in this study. The majority of the participants were students (66.5%) residing in southern India (89.6%) pursuing medical profession (88.9%). The predominant age group was 18–24 years (73.9%). The awareness level regarding organ donation among healthcare professionals and students was 69%. Healthcare professionals and respondents aged 40 years and above had better awareness levels regarding organ donation which was reported as statistically significant ($p < 0.001$).

Conclusion: Healthcare professionals and students awareness about organ donation need to be improved. Strategies including but not limited to prioritizing employment and education to the first relatives of the deceased organ donor should be implemented by the government to legally improve organ donation willingness.

Keywords: Awareness, India, Organ donation.

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HIGHLIGHTS

This study highlights the awareness level regarding organ donation at pan-Indian level among healthcare professionals and students as they are the most important links in the organ donation chain, which can motivate the general population.

INTRODUCTION

Organ donation provides a life-saving opportunity for patients with severe organ failure. Although India holds second place in live donor transplants around the globe,¹ the rate of organ donation of the deceased Indian population is exceptionally low (0.26 per million population) accounting for annual mortality of 500,000 people every year owing to the unavailability of organs.² This disproportionate level in the Indian scenario is due to multiple reasons including but not limited to the lack of public awareness,³ superstitions or religious beliefs as well as strict laws.⁴ Also, lack of system preparedness and inadequate inter-institutional connectivity cause a huge gap in the donation of organs from interested donors as well as willing family members of the deceased individual.⁵ This led to an immense outpacing of the patients on the transplant waiting list in comparison to the deceased donor organs as thousands of people wait every year for organ donations for undergoing transplants.⁶ The Indian cadaveric organ donation program is still in its preliminary stage owing to a lack of knowledge among medical professionals and the general public at large regarding the concept of brain death, religious and organizational concerns, as well as legal and ethical challenges.

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Furthermore, there have been a few incidents of organ trafficking in India that have resulted in opposition as well as a negative attitude towards organ donation, though several remedial actions have been implemented to eliminate such issues. The Government of India enacted the Transplantation of Human Organs and Tissues Act in 1994, and to broaden its scope and encourage cadaver organ

donation, the government issued regulations in 2014.⁵ There is a need to raise awareness regarding organ donation among healthcare professionals as they are the most important links in the organ donation chain, which can, in turn, motivate the general populace.⁷ Hence, this study aims to assess and analyze the awareness level of healthcare professionals and students on organ donation at the national level with a view to suggest potential strategies in order to improve awareness and willingness towards organ donation.

MATERIALS AND METHODS

Participants and Recruitment

A cross-sectional online and offline survey was conducted at the national level between July 2022 and September 2022. The snowball sampling technique was used for data collection. WhatsApp, email, and other social media platforms were utilized in distributing the questionnaire. Google Sheets was used as an electronic tool to send the questionnaire and collect responses. We have included all the health care professionals comprising doctors of various specialties, nurses, paramedics, supporting staff in the hospital, students of various fraternities such as medical, paramedical, nursing and physiotherapy as well as allied health sciences that belong to Indian nationality. Those who failed to respond to all the questions were excluded.

Survey

A self-constructed semi-structured questionnaire was prepared including a sociodemographic profile and questions related to awareness as well as willingness towards organ donation which were structured using the website of National Organ & Tissue Transplant Organization (NOTTO).⁸ The questionnaire was distributed through Google Forms. The link to the questionnaire was sent through various social media platforms. The estimated sample size for this study was 334 which was computed using the formula, $N = Z^2pq/d^2$, where $Z = 1.96$, $p = 0.68$ (proportion of awareness level among healthcare participants regarding living as well as cadaveric organ donation that was obtained from a previous study),⁹ $q = (1 - p)$, $d = 5\%$.

Data Analysis

The data was entered in the excel sheet and statistical analysis was undertaken using SPSS software, version 25. Descriptive statistics and Pearson's Chi-squared tests were performed to find the significant associations between various factors undertaken in the study.

Ethical Considerations

Ethical approval was obtained from the ethical committee of SRM Medical College Hospital & Research Centre (Ethical Clearance No. 8483/IEC/2022). All information in the study has been kept confidential and has been accessed only for scientific research purposes.

RESULTS

A total of 1,303 respondents participated in this study. The respondents were from pan Indian level with predominance from the southern zone of India (89.6%). The majority of the respondents were students (66.5%) and from the medical profession (88.9%). A total of 73.9% of the respondents were between the age group of 18–24 years, 19.4% were under 25–39 years and the remaining 6.7% were 40 years and above. In our study, women made up the

Table 1: The sociodemographic variables of the respondents

S. No.	Sociodemographic variables	Frequency (N)	%
1	Age (years)		
	18–24	963	73.9
	25–39	253	19.4
	≥40	87	6.7
2	Gender		
	Male	586	45.0
	Female	716	55.0
	Others*	1	0.1
3	Occupation		
	Healthcare professionals	436	33.5
	Students	867	66.5
4	Profession		
	Medical	1158	88.9
	Nurses	56	4.3
	Paramedics	89	6.8
5	Marital status		
	Married	230	17.7
	Unmarried	1067	81.9
	Separated	6	0.5
6	Religion		
	Hindu	1082	83.0
	Christian	110	8.4
	Muslim	94	7.2
	Others**	17	1.3
7	Region		
	North zone	52	4.0
	East zone	39	3.0
	West zone	26	2.0
	South zone	1168	89.6
	Central zone	8	0.6
	Northeast zone	10	0.8

*Transgender, **Sikh, Jain, Buddhist, Parsi, and atheist

majority of responses (54.9%), followed by men (44.9%), and one transgender person (0.1%). Hinduism was the most common religion among the respondents (83%) followed by Christianity (8.4%), Islam (7.2%), and the Sikh, Jain, Buddhist, Parsi, or Atheist communities (1.3%) (Table 1).

In our study, the level of awareness among healthcare professionals and students regarding organ donation was 69% (Fig. 1). According to 85.1% of the respondents, the brain should not be donated from a deceased individual (brain dead) whereas 14.9% thought brain can be donated. Furthermore, 7.6% of the respondents believed that heart can be donated by a living donor. A total of 7.2% of the respondents were unaware that organ trading is punishable under the transplant of human organ act. 30.8% of the respondents were not aware of the minimum age for the living donor, that is, 18 years. A total of 15.4% were unaware of the registration policies for organ donation in NOTTO. Furthermore, 9% of the participants believed that family consent is not mandatory for organ retrieval from a brain-dead individual. About 50.3% were not aware of the rights of the family members to stop organ donation from the brain-

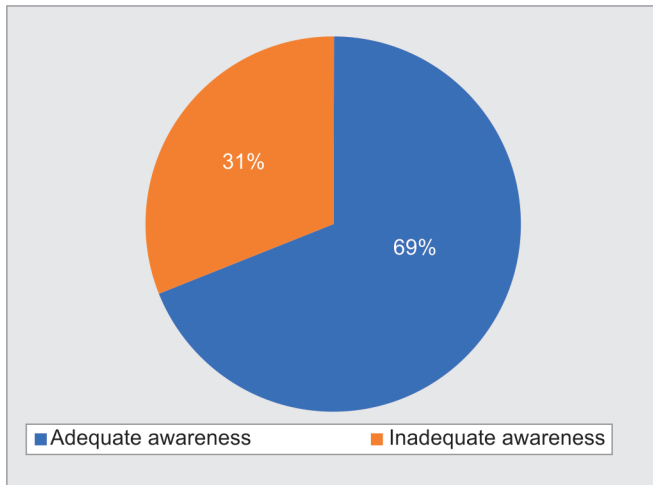


Fig. 1: Figure showing the level of awareness among respondents regarding organ donation

dead individuals, even if the diseased had registered to express willingness to donate his/her organ after death. A total of 32.8% were under the impression that the majority of organ donation happens illegally. Also, 30.8% of the respondents believed that there can be possibilities of serious misdiagnosis in declaring live patients to be brain dead. Moreover, 24.2% were unaware that the cost of sustaining the circulation of braindead for organ transplantation procedures should be borne by the treating hospital of recipients and not by the patient relatives. Only 47% were aware that the postmortem of the diseased donor with medicolegal background shall be conducted at the operation theatre itself. A total of 92% of the respondents were willing to motivate their relatives and friends regarding organ donation whereas 2.5% showed unwillingness towards it due to religious constraints. This shows that majority of the healthcare professionals were willing to motivate the general population towards organ donation, however, a significant portion of healthcare professionals still needs to be educated regarding organ donation. 73% of the respondents were unaware of the ways to contact the organ transplant coordinator (Table 2).

To ethically motivate the general populace towards organ donation, 71.5% of the respondents felt that the government should give priority to education as well as employment for the families of deceased organ donors. A total of 51.6% felt that in case the family of the deceased person shows interest to donate organs, the entire cost of treatment of the patient before declaring as brain dead should be returned to the patient's relatives. Only about 29.9% felt that the "opt-out" method shall be followed in India. According to 15% of the respondents, all the above-mentioned modalities should be applied in order to gain better outcomes regarding organ donation awareness (Fig. 2).

The awareness level was found to be better as age advanced. Respondents aged 40 years and above scored 84% compared to those who were less than 25 years which was clinically significant ($p < 0.001$). Though the level of awareness was better among male than female respondents (72% vs 67%), it was not reported as significant. Healthcare professionals had better awareness levels regarding organ donation than the students (75.2% vs 66.1%) which was found significant ($p < 0.001$). This reveals that there is a need to enhance the awareness level among students through proper

counseling and education regarding organ donation. Among the respondents, medical professionals had a better awareness level as compared to the nurses and paramedic professionals though it was reported as insignificant (Table 3).

DISCUSSION

This cross-sectional descriptive study was conducted to evaluate the degree of awareness towards organ donation among Indian medical students and professionals at the national level. Medical professionals and students play a significant role in increasing the level of knowledge among the general populace regarding organ donation as they are the most important components in the chain of organ donation. The current study demonstrates that students and healthcare workers in India have a moderate level of awareness regarding organ donation. To the best of our knowledge, this is one of the few studies conducted at the national level which have assessed the awareness level both among healthcare professionals as well as students from various fraternities (medical, nursing, and paramedical) Also, this is the first awareness study on organ donation at the national level with sample size more than 1,000.

In our study, the majority of the respondents were between the age group of 18–24 years (73.9%) and female respondents hold the major proportion than the male respondents (55% and 45%) which was found similar in organ donation awareness studies conducted among nursing, dental and undergraduate medical students.^{10–12} The level of awareness in our study was 69% which was comparable to the study conducted by Tamuli et al. (79.17%),¹³ survey conducted by the Times of India (94%)¹⁴ and a study conducted by Deepthi et al. (97.6%).¹⁵ The variation in the awareness level in these studies might be attributed to the change in the geographical location, sample size as well profession of the included participants. A total of 92% of the respondents in our study favor the organ donation promotion which was somewhere similar to the study conducted by Tamuli et al. (90.6%),¹³ but was higher compared to the study done by Sucharitha et al. (77%).¹⁶

About 91% of the respondents believed that prior consenting from the family members of the brain-dead individual regarding organ donation is a mandatory step. Also, according to 49.7% of respondents, the family members of the deceased individual have full rights to stop the organ donation process even if the diseased has registered for organ donation. In India, family members have a significant role in decision making,^{17–19} hence, the donor is not the exclusive decision maker for organ donation. Vincent et al.²⁰ in their study reported that 65.3% of the nursing participants and 56.8% of the medical students agreed with the same fact. Similar findings were also seen in other studies where 60–80% of the participants share similar perceptions.^{21–23} This demonstrates the positive perception of the study participants towards consenting from family members regarding organ donation as well as the significance of obtaining family permission prior to organ retrieval. More than half of the respondents in our study had good knowledge regarding the organs to be donated from the brain dead (85.1%) as well as from the living donor (92.4%). This shows that the respondents were well aware of the donation of organs from both living and deceased donors. Similar findings were observed in a study conducted by Balwani et al.²⁴ where more than half of the population (56%) were aware of organ donation eligibility. On contrast, a study conducted by Mondal²⁵ in West Bengal revealed a

Table 2: The awareness related variables among the respondents

S. No.	Awareness related variables		Frequency	
	Awareness questions	Responses	(N)	%
1	After brain dead, the following organs shall be donated except	Brain	1109	85.1
		Heart	72	5.5
		Kidney	23	1.8
		Liver	13	1.0
		Lung	21	1.6
		Pancreas	65	5.0
2	What organs shall not be donated from living donor?	Heart	1204	92.4
		One kidney	50	3.8
		A part of liver	49	3.8
3	Are you aware that selling or buying organ according to transplant of human organ Act is punishable?	Yes	1132	86.9
		No	94	7.2
		Maybe	77	5.9
4	Minimum age for living donor	16 years	104	8.0
		18 years	902	69.2
		25 years	297	22.8
5	Are you aware that anyone shall join the NOTTO Organ Donor Register to express a wish to help others by donating organs or tissues after death?	Yes	958	73.5
		No	201	15.4
		Maybe	144	11.1
6	Is it mandatory to take family consent to retrieve organs from a brain dead?	Yes	1186	91.0
		No	117	9.0
7	Can family member object and stop the organ retrieval from a pledged organ donor against his will?	No. Family cannot stop if the diseased has given willingness to donate	656	50.3
		Yes. The family member has rights to stop even if the diseased has registered for organ donation	647	49.7
8	Your opinion on organ transplant	Majority of the organ transplant happens legally	875	67.2
		Majority of the organ transplant happens illegally	428	32.8
9	Do you believe that there is a possibility for serious error of declaring live patient as brain dead?	Yes. It could happen	401	30.8
		No. It cannot happen	902	69.2
10	The treatment cost to sustain life of the brain dead in ICU while waiting for the preparation of transplant shall be recovered from	Treating hospitals of recipients	988	75.8
		Patient relative	315	24.2
11	Are you aware that in case of medico legal case (MLC) the postmortem of brain-dead donor shall be done at the operation theatre immediately after the organ retrieval is done?	Yes	613	47.0
		No	409	31.4
		Maybe	281	21.6
12	Would you motivate if any one of your relative or friends family seek your opinion to donate organ of their brain-dead family member	Yes. I feel professionally satisfied if I do so	1199	92.0
		No. I am worried that I may be tagged as organ trade facilitator	72	5.5
		No. My religion doesn't support	32	2.5
13	Do you know how to contact your transplant coordinator and his contact number?	No	951	73.0
		Yes	352	27.0

14	In your opinion, what shall be done ethically to motivate people to donate organs after brain dead (multiple choice options)	Response A	241	18.5
		Responses A and B		
		Responses A and C	206	15.8
		Responses A, B, and C	31	2.4
		Response B	196	15.0
		Responses B and C	464	35.6
		Response C	65	5.0
			100	7.7
	A Entire treatment cost including the cost before declaring as brain dead shall be refunded to family and the same shall be collected from the beneficiary			
	B Government shall give priority in education and employment for the organ donor family			
	C Opt-out method shall be followed (if no objection is raised it is considered as consent for organ donation)			

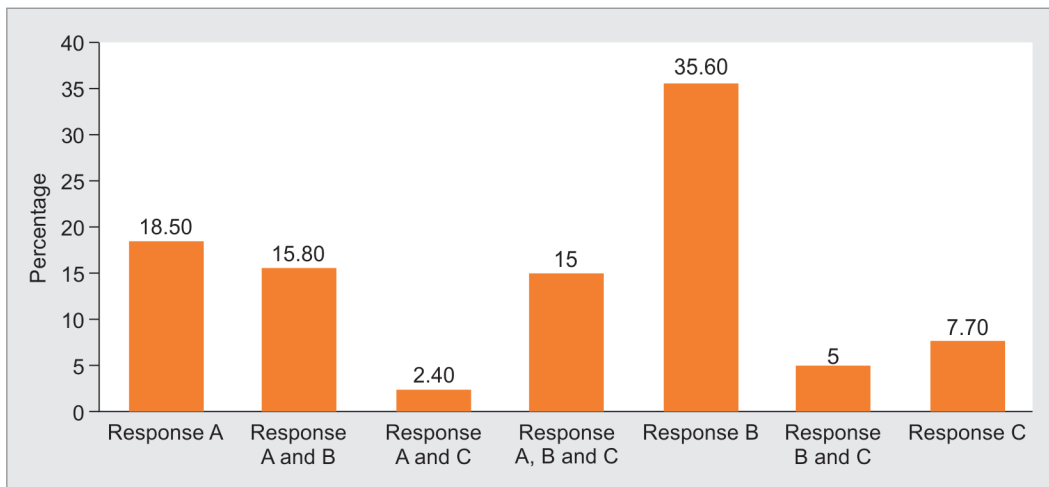


Fig. 2: Figure showing opinions of the respondents regarding strategies towards motivating people regarding organ donation. Response A: Entire treatment cost including the cost before declaring as brain dead shall be refunded to family and the same shall be collected from the beneficiary; Response B: Government shall give priority in education and employment for the organ donor family; Response C: Opt-out method shall be followed (if no objection is raised it is considered as consent for organ donation)

low awareness level of 15.6% regarding the same. These disparate results might be attributable to the socioeconomic and cultural variations across the study populace.

The majority of the respondents in our study agreed that the government should initiate strategies to motivate organ donation by providing priorities in the beneficiary schemes and seat allotment quota in education and employment for the organ donor's first relatives. Apart from this the total money spent on the treatment of the deceased shall be borne by the recipient of the organ. This will not only encourage the families to donate the organs of the deceased but also help in the prevention of illegal organ trading. Our study revealed that there is a significant knowledge gap between healthcare professionals and students and that need to be addressed as there is a lack of formal training programs for this noble cause in India.²⁶ Healthcare professionals must be taught about organ donation during their training period and the students accordingly in their curriculum which will expose them to the apt way of organ donation management.^{27,28} Also, there should be a periodical mandatory awareness program on organ donation along with posters, wall stickers, and handouts in all the service-providing areas of the hospital as well as in the intensive care units (ICUs) and emergency zones.

The growing disparity between the demand and the actual condition of organ donations is turning organ donation into a matter of public health importance. The general public's lack of information about organ donation has been primarily connected to the knowledge gap among healthcare professionals and students. There is a need to dispel societal biases and misunderstandings about organ donation through stringent awareness efforts. Since primary health centers are the first point of service and are closer to the community, it is crucial that medical professionals should be actively involved in such efforts. As the organ donation registration process is onerous, the process must be streamlined and registration facilities must be made available at the lowest feasible level of health care. One limitation of our study is that it included only healthcare professionals and students from medical and paramedical fraternities hence the study findings cannot be generalized at the community level. The awareness about organ donation among healthcare professional and students need to be improved. It is proposed that strategies such as providing priority in employment and education to the first relatives of the deceased organ donor should be implemented by the government to legally improve organ donation willingness.

Table 3: The association between sociodemographic variables and awareness level among respondents

S. No.	Sociodemographic profile	Total N (%)	Awareness score		p-value
			Adequate N (%)	Inadequate N (%)	
1	Age (years)				
	18–24	963 (73.9%)	638 (68.0%)	325 (32.0%)	<0.001*
	25–39	253 (19.4%)	190 (75.0%)	63 (25.0%)	
>40	87 (6.7%)	73 (83.9%)	14 (16.1%)		
2	Gender				
	Male	586 (45.0%)	421 (71.8%)	165 (12.7%)	0.108
	Female	716 (55.0%)	479 (36.8%)	237 (18.2%)	
Others	1 (0.1%)	1 (0.1%)	0 (0.0%)		
3	Occupation				
	Healthcare professional	436 (33.5%)	328 (75.2%)	108 (24.8%)	<0.001*
Student	867 (66.5%)	573 (66.1%)	294 (33.9%)		
4	Profession				
	Medical	1158 (88.9%)	805 (69.52%)	353 (30.48%)	0.535
	Nurses	56 (4.3%)	35 (62.5%)	21 (37.5%)	
Paramedic	89 (6.8%)	61 (68.5%)	28 (31.5%)		
5	Marital status				
	Married	230 (17.6%)	183 (79.6%)	47 (20.4%)	<0.001*
	Unmarried	1067 (81.9%)	716 (67.1%)	351 (32.9%)	
Separated	6 (0.5%)	2 (33.3%)	4 (66.7%)		
6	Religion				
	Hindu	1082 (83.1%)	749 (57.5%)	333 (25.6%)	0.708
	Christian	110 (8.4%)	78 (70.9%)	32 (29.1%)	
	Muslim	94 (7.2%)	61 (64.9%)	33 (35.1%)	
Others	17 (1.3%)	13 (76.5%)	4 (23.5%)		

*Significant factor

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