

Organ Donation among Medical Students: A Cross-sectional Study of Knowledge, Attitude, and Practices

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ABSTRACT

Background: Patients with end-stage organ failure experience a gradual deterioration in health status and daily functioning, and the timing of death is often uncertain. Organ transplantation is the only curative treatment for these patients. In India, there are 0.26 organ donors for every million people. This is a result of people's ignorance of the requirements for organ donation as well as the overall lack of knowledge among the general public and medical experts about the significance, methods, advantages, and legal issues surrounding organ donation. Thus, the purpose of this study was to ascertain medical students' knowledge, attitudes, and practices about organ donation.

Methods: A pretested semi-structured questionnaire was used in a cross-sectional study to evaluate the knowledge, attitudes, and practices of 180 medical students on organ donation. Microsoft Excel was used to enter and evaluate the data.

Results: The majority of medical students (66.7%) were female, with a mean age of 23.03 ± 0.73 years. 88.89% of participants were willing to donate organs, while 90.55% of participants had adequate awareness about organ donation. Merely 5.6% had a donation card. Knowledge of organ donation was substantially correlated with willingness to donate. Fear of organ misuse was the most frequent obstacle to organ donation. The most popular source of information was the Internet.

Conclusion: The findings reveal that while the majority of the students were adequately knowledgeable, there is still a need for further improvement in the knowledge, attitude, and practices. Appropriate knowledge and orientation can empower future physicians to be donors themselves and motivate their patients accordingly.

Keywords: Attitude, Jeevandan, Knowledge, Medical students, Organ donation, Practice.

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INTRODUCTION

Globally, chronic illnesses are now the primary cause of morbidity and death, surpassing infectious diseases. An estimated 0.78% to 1.39% of Indians have chronic kidney illness, 1.3 to 4.6 million have heart failure, and 400 to 500 million have chronic viral hepatitis.¹ Patients with end-stage organ failure experience a gradual decline in their everyday functioning and health, and it is unclear when they will pass away. For some people, organ transplantation is a treatment option. The transfer of human cells, tissues, or organs from a donor to a recipient with the aim of restoring one or more bodily physiological functions is known as transplantation.²

Donating an organ or a portion of an organ for transplantation into another person is known as organ donation, and it can originate from a living or deceased donor.³

Transplantation has been practiced in India for more than three decades; however, actual delivery remains severely limited by shortages of both resources and donor organs. A survey indicates that annually, approximately 500,000 individuals in India die due to insufficient

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organ availability, while about 150,000 people require a kidney transplant, of whom only 5,000 receive one. Thus, organ replacement remains unreachable for the overwhelming majority of patients. The fundamental constraint is the scarcity of available organs, which has contributed to the emergence of organ trading and organ trafficking. Addressing organ shortage and trafficking is best approached through the promotion of cadaveric

organ transplantation. In contrast to many countries where cadaveric programs are highly successful, India exhibits that fewer than 2% of transplantations originate from brain-dead, heart-beating cadaver donors. There is a very low organ donation rate in India, estimated at 0.26 donors per million population, compared with higher rates in other countries such as the United States (approximately 26), Spain (approximately 35.3), and Croatia (approximately 36.5) per million, respectively.

With a view to simplify the activities related to organ donation and transplantation, India brought in the THO Act in 1994.⁶ Several states adopted this, and Tamil Nadu, along with undivided Andhra Pradesh were among the first to adopt it.⁷ The cadaver transplantation program Jeevandan was created by the governments of Andhra Pradesh and the newly formed state of Telangana to solve various concerns about public awareness, infrastructural development, brain-death declaration, and transplant coordinator training.¹

Notwithstanding these efforts, awareness of organ donation remains markedly low. Contributing factors to this inadequate level of awareness may include the general public's ignorance concerning the importance of organ donation and the procedures involved.

Organ Donation's Benefits and Legal Implications⁸

It was discovered that even the medical community lacked sufficient understanding of the regulations and practices related to organ transplantation.⁵ This revelation makes it imperative to increase public awareness of organ donation. A pragmatic method would be to create awareness in college students, specifically students in the medical field, since they can be the most effective ambassadors for the general society.⁸ Taimur *et al.* (2009) found that physicians can become effective sources of information in inculcating a positive attitude toward organ donation in society.⁹

Since medical students are future physicians and are at the forefront of the continuum that is organ procurement, they can be considered to play an important role in organ donation promotion by informing and encouraging the public to pledge for organ donation. For this purpose, it is critical to evaluate the knowledge and attitudes of undergraduate medical students regarding organ donation to ensure a sufficient supply of organs in the future.

METHODOLOGY

A cross-sectional study was carried out in a hospital to evaluate the knowledge, attitude, and practices regarding organ donation among undergraduate medical students of a tertiary healthcare teaching institute.

Study Setting and Duration

The study was carried out at a tertiary care teaching hospital in India over a period of three months.

Study Population and Sampling

The study population consisted of MBBS students enrolled at the institute during the study period. A total of 180 students were included in the study using a convenience sampling technique, based on their availability and willingness to participate.

Inclusion and Exclusion Criteria

Inclusion criteria:

- MBBS students of the tertiary care institute who provided written informed consent

Exclusion criteria:

- Students having close relatives or friends in need of organ transplantation
- Students who were unwilling to participate in the study

Data Collection Tool and Procedure

Data were collected using a pretested, semi-structured, self-administered questionnaire, developed after reviewing relevant literature. The questionnaire was pretested among a small group of students not included in the final study, and necessary modifications were made to improve clarity and comprehensibility.

The questionnaire comprised five sections covering:

1. Sociodemographic characteristics
2. Knowledge regarding organ donation
3. Attitude towards organ donation
4. Practices and willingness for organ donation
5. Sources of information regarding organ donation

The purpose of the study was explained to the participants prior to data collection, and completed questionnaires were collected immediately to minimize non-response.

Ethical Considerations

After receiving approval from the tertiary care institute's Institutional Ethics Committee, the study was carried out. Prior to inclusion, each participant provided written informed consent in the research. Throughout the study, participant identity and confidentiality were guaranteed.

Statistical Analysis

Microsoft Excel was used to enter the data, and the relevant statistical software was used for analysis. While continuous variables were expressed as mean and standard deviation, categorical variables were summarized using descriptive statistics like frequencies and percentages. Appropriate statistical tests were used to evaluate relationships between sociodemographic factors and knowledge, attitude, and practice scores. Statistical significance was defined as a *p-value* of less than 0.05.

Table 1: Distribution of study participants according to age, sex, and religion (n = 180).

Variable	Category	Frequency (%)
Age (years)	18–19	29 (16.1)
	20–21	99 (55.0)
	22–23	40 (24.4)
	24–25	12 (6.7)
Sex	Male	60 (33.3)
	Female	120 (66.7)
Religion	Hindu	156 (86.7)
	Muslim	8 (4.4)
	Jain	11 (6.1)
	Buddhist	5 (2.8)

Results:

In table 1, a total of 180 MBBS students participated in the research. The dominant majority of the students was aged 20–21 years (55%), and the next was 22–23 years (24.4%). Female students dominated the research participants (66.7%), and the majority of the students belonged to the Hindu community (86.7%).

Table 2: Knowledge of medical students regarding organ donation (n = 180).

S. No.	Knowledge variable	Correct response n (%)
1	Heard about organ donation	180 (100)
2	Identified organs that can be donated	103 (57.2)
3	Aware of time limit for organ transplantation	115 (63.9)
4	Correct knowledge regarding donor types	139 (77.2)
5	No disfigurement of donor body after donation	139 (77.2)
6	No age limit for organ donation	88 (48.9)
7	All religions support organ donation	82 (45.6)
8	Heard about donor card	108 (60.0)
9	Family consent required despite donor card	123 (68.3)
10	Donor identity not revealed to the recipient	97 (53.9)
11	Aware of Act regulating organ donation	160 (88.9)
12	Able to name the Act	15 (8.3)
13	Aware that selling organs is an offense	120 (66.7)
14	Aware of organ shortage in India	165 (91.7)

It is evident from Table 2 that all the students knew about the existence of the law on the issue of organ donation. However, only 8.3% knew the name of the Act related to the topic. Regarding donor cards and family consent, 60% and 68.3%, respectively, knew about them.

Table 3: Association between sex and knowledge regarding organ donation (n = 180)

Sex	Adequate knowledge n (%)	Inadequate knowledge n (%)	Total
Male	53 (88.8)	7 (11.2)	60
Female	110 (91.7)	10 (8.3)	120
Total	163 (90.6)	17 (9.4)	180

Chi-square = 0.203, df = 1, p = 0.65

In table 3, 90.6% of the respondents showed a good level of knowledge regarding organ transplantation. Lack of association between sex and level of knowledge was found (p > 0.05).

Table 4: Attitude of medical students towards organ donation (n = 180)

S. No.	Attitude variable	Yes n (%)
1	Willing to donate organs	152 (84.4)
2	Willing to motivate others	176 (97.8)
3	Support family members for donation	170 (94.4)
4	Support mandatory donation law	71 (39.4)
5	Organ donation awareness in schools	176 (97.8)

Attitudes towards organ donation were positive. There was a high percentage of 84.4% to donate organs, but only 39.4% supported mandatory donation of organs after death despite families’ disapproval (Table 4).

Table 5: Association between knowledge and willingness to donate organs (n = 180).

Knowledge level	Willing to donate n (%)	Not willing n (%)	Total
Adequate	140 (85.9)	23 (14.1)	163
Inadequate	10 (58.8)	7 (41.2)	17
Total	150 (83.3)	30 (16.7)	180

Chi-square = 6.29, df = 1, p = 0.012

As shown in Table 5, the willingness to donate showed an enormous difference between students with adequate and those with inadequate knowledge, with 85.9% willing to donate and 58.8%, respectively. This difference was statistically significant, with p < 0.05.

Table 6: Reasons for unwillingness to donate organs (n = 30).

Reason	Frequency (%)
Social and cultural beliefs	14 (46.7)
Fear of misuse of organs	12 (40.0)
Fear of being declared dead early	4 (13.3)

Among the students who did not want to donate, the major reason provided for the action was based on social and cultural beliefs, which contributed 46.7% (Table 6).

Table 7: Practices related to organ donation among medical students (n = 180).

S. No.	Practice variable	Yes n (%)
1	Possession of donor card	10 (5.6)
2	Family member donated organs	24 (13.3)
3	Willingness to accept money for donation	28 (15.6)

As evident from Table 7, with good knowledge and attitude, the practice in real life is still not optimal. Only 5.6% of the students possessed a donor card.

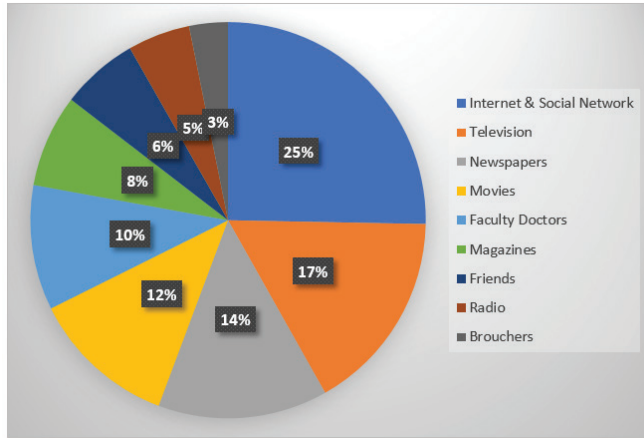


Figure 1: Source of information regarding organ donation (n=180).

The most common source of information regarding organ donation among medical students was Internet and social networking platforms (25%), followed by television (17%) and newspapers (14%). Movies accounted for 12% of the information sources, while faculty doctors (10%) and magazines (8%) also contributed. Information obtained from friends (6%), radio (5%), and brochures (3%) constituted a smaller proportion.

DISCUSSION

Knowledge of the Study Subjects

In the current study, 90.55% of medical students had adequate knowledge about organ donation. For comparison, Karini *et al.* reported that among the final-year medical students, only 56% had sufficient knowledge. In the current study, female students (91.66%) were found to possess significantly more knowledge than male students, a finding consistent with those of Alex *et al.* and Adithyan *et al.*^{11,12} A majority of the medical students, 84.4%, were aware of the shortage of available organs for transplantation in India. This was in concurrence with Payghan *et al.*, who found 75.29%.¹³ The main source of information about organ donation was found to be the internet and social networks (80%) and television (52%). These trends are supported by findings from

Sindhu *et al.*, Bathija *et al.*, and Payghan *et al.*, indicating the impact of media and social networks on the awareness of organ donation.¹³⁻¹⁵

In the present study, all participants (100%) showed awareness about organ donation, similar to the studies by Sucharitha *et al.* (97.2%), Agarwal (100%), and Vinay *et al.* (98%).¹⁶⁻¹⁸ However, only 57.2% of the respondents could correctly identify all organs that can be donated, unlike in the case of Karini *et al.*, who showed only 26%.¹⁰ The majority of the respondents, 77.2%, knew that the donor bodies would not get disfigured after donation of organs, which is similar to the reported results by Agarwal and Ali *et al.*^{17,19} Still, 48.9% of the medical students had correct knowledge that no age limit exists for organ donation, similar to Agarwal (43%), Karini *et al.* (47.2%), and, in contrast, Sucharitha *et al.* (19.2%).^{10,16,17}

Myths and misconceptions regarding organ donation exist among medical students even in the absence of any absolute religious prohibition, as evidenced by only 45.6% acknowledging that all religions permit organ donation. This study has also identified only 60% who knew about the donor card; hence, there is a need to sensitize medical students about the donor cards. Regarding consent, 68.3% knew that family consent has to be obtained even if the deceased had signed for donation; these are concordant with Karini *et al.* (53.7%).¹⁰

In the various studies conducted by Ali *et al.* in Karachi, Sucharitha *et al.* in Chennai and Vinay *et al.* in Mangalore, only 13.3%, 27% and 13.9%, respectively, were aware that there is an Act, which regulates the organ donation process; in contrast, 88.9% of participants in the current study were aware of such an act.^{16,18,19} Our data further reveal that only 8.33% named the act regulating organ donation, while 66.7% understood that accepting money or other benefits for the donation of organs is an offence. These findings denote a poor knowledge of the Transplant of Human Organ Act (THOA) among medical students and clearly indicate the need for focused educational interventions.

Attitude of Medical Students towards Organ Donation

The majority of medical students, estimated to be 84.4%, take a positive attitude and is willing to give away their organs. The result is in line with many studies, for example, Bathija *et al.*,¹⁵ who recorded 71.3% in agreement with voluntary organ donation.^{10,19} However, Karini *et al.* and Ali *et al.* revealed that only 48% of fifth-year medical students would consider donating their organs.^{13,18} Payghan *et al.* and Vinay *et al.* even recorded a higher response of nearly 90% for donating their own organs.

Our analysis reveals a positive association between the awareness level of organ donation among students and their consent for organ donation. A Pakistan study done by Ali *et al.* and in a study conducted by Dasgupta *et al.* in urban community of West Bengal state recommend that

awareness about organ donation in medical professionals and in the general public is essential.^{19,20} A staggering 97.8% agreed that organ donation education needs to be made a part of their curriculum in schools, and Adithyan *et al.* found that 91.2% agreed that the medical curriculum needs to be updated related to organ donation.¹²

The primary reasons for not being able to donate were the fear of organ misuse by 55.5%, followed by the fear of being pronounced dead earlier if one keeps an organ donation card by 27.85%. The results were similar to Sucharitha *et al.* And Bathija *et al.*^{15,16} The majority of the respondents, that is, 95%, wanted to encourage other people to donate, which is consistent with that of Vinay *et al.* at 98%.¹⁸

Regarding whether this should be made compulsory under the law, only 39.4% were in favor of this, and this is almost equal to the study of Ali *et al.* on Karachi, which was only 15.2%. (19)

Practice on Organ Donation

The majority of the participants demonstrated good knowledge and attitude, but only 5.6% of them possessed a donor card. Consistent with the results of other studies by Chung *et al.* with 27%, Vinay *et al.* with 0%, and Adithyan *et al.* with 7.2%, the results point to the significant discrepancy between knowledge and actions, belief and practices.^{12,18,21} Despite the legal and ethical contours that define paid organ donation, 15.6% of medical students or practitioners were found to consider a financial offer for an organ, which is not acceptable at all and emphasizes needs to make medical staff aware of organ donation as well as the legislations surrounding this practice.

CONCLUSION

Our analysis shows that the interns have good knowledge and a positive attitude towards organ donation. But the knowledge about the Act governing the same, an important paradigm for doctors, is found to be inadequate. Though the mindset towards donation is positive, only a few possess the actual quality by holding a donor card. The major obstacle seems to be the misuse of organs. The desire to donate strongly correlates with the acquired level of knowledge, and thus with proper knowledge and orientation, medicos could become future organ donors and encourage others in turn.

Limitations

The study population represents only a small fraction of the medical community. So, the results available from this cannot be generalized for the whole community.

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