

Knowledge and Attitude towards Organ donation among the Medical and Engineering students in Tumakuru, Karnataka

Swamy RM,¹ Riyaj Ahmad Kalaburgi,² Manjunath GN,* Lavanya R,³
Kousalya R³,

¹ Professor of Pharmacology SSMC, Tumkur, India

² Assistant professor/Statistician

³ Medical student

*Corresponding author

Professor and Head of Pharmacology, SSMC, Tumkur, India -572107

Abstract

Background: Organ donation is the cornerstone for the transplantation and with the increase in the number of non-communicable disease, there is also a demand for organs. Worldwide there is very poor organ donation for various reasons. Young students who contribute a significant number in the society can bring about a big change.

Aim: To assess the awareness and attitude of the young graduates in medical and engineering stream.

Materials and methods: It is a cross sectional observational study using a semi structured questionnaire prepared after reviewing the literature and studied on 400 students who are pursuing medicine and engineering.

Results: The mean score of knowledge on organ donation among medical students was 8.05 ± 1.75 SD and among engineering group was 7.31 ± 1.42 SD ($P < 0.001$). The mean score of attitude on organ donation among medical students was 18.98 ± 3.74 SD and among engineering group was 20.98 ± 3.32 SD. ($P < 0.001$). Females have better knowledge and attitude compared to males in both the groups

Conclusion: Knowledge was good among the medical students and attitude was much better in engineering students. Members holding donor card were less but agreed to motivate the family members to make the donor card. By doing such studies we can indirectly create the awareness and increase the voluntariness to make the donor card. Also recommend the authorities to introduce organ donation as a part of curriculum right from school education.

Key words: Organ donation, medical Student, engineering student, Awareness, Attitude.

Date of Submission: 25-04-2020

Date of Acceptance: 08-05-2020

I. Introduction:

Organ shortage is universal and organ donation is the cornerstone in the process of transplantation.¹ There is a worldwide shortage of donor organs in comparison to the need for transplantation; this is known as "donation gap".^{2,3}

India being the second most populated country where organ donation is only 0.26 per million (0.01%) populations.^{4,5} Whereas many major countries have donation rates of 20 – 30 per million populations (70-80%) as per the WHO report.^{1,5} Organ transplantation is often the only treatment for end state organ failure, such as liver and heart. Although end stage renal disease patients can be treated through other renal replacement therapies, kidney transplantation is generally accepted as the best treatment both for quality of life and cost effectiveness. Kidney transplantation is by far the most frequently carried out transplantation globally.⁶ One of the reasons for the donor shortage in this country is the many myths and misconceptions clouding the issue, particularly among those who have not personally encountered transplant recipients or family members of donors.⁷ Health care professionals (HCPs) are a key element in facilitating cadaveric organ donation process.⁸ The Factors that may contribute to the limited availability of donor organs can be the lack of knowledge and awareness on organ donation, and on the legal and procedural details.⁹⁻¹²

Organ donation number can be increased by improving their knowledge and developing more positive attitudes toward organ donation and transplantation.⁵ The best way to start this is to promote the awareness of the college students, especially those in medical and engineer field. Because they form the major chunk and will be the most suitable persons to carry the message to the community by educating and motivating the public to pledge their organs for donation.

Literature review shows that there are very few studies conducted in this geographical location and also comparing between the medical and non medical participants. Therefore, assessing medical and engineering student's knowledge and attitude regarding organ donation is very important for future organ supply.

Objective: To compare the knowledge and attitude towards organ donation among medical and engineering students.

II. Methodology:

This is a comparative Cross sectional involving medical and engineering students of Sri Siddhartha Academy of higher education, Tumakuru, Karnataka, India. After obtaining Institutional Ethical Committee Clearance a total of 200 subjects each from both medical and engineering stream were enrolled into this study. Informed consent was taken from all the participants.

A semi-structured self-administered questionnaire was given to students belonging to different semester and phases of MBBS and BE courses after explaining the purpose of the study. This includes part-1 of the questionnaire related to demographic data such as age, gender and course. Part-2 (Q1-12) consists of 12 questions to assess knowledge. Scoring is done by giving 1 point each and score of >7 are considered to have good knowledge. Part 3 (Q13-18) consisted of Hypothetical statements to assess attitude, barrier, practice and source of information regarding organ donation. The responses were measured on a 5 point Likert's scale ranging from totally disagree to strongly agree. Aggregate score on 5 variables were calculated for each participant to get each participant's overall attitude level. A score of > or =20 considered to have positive attitude. Part 4 (Q19-20) consisting of a response of having a donor card and willing to have a donor card was taken as a "positive practice" toward donation.

The participants were instructed not to discuss the questions/answers among themselves. Only completed questionnaires were utilized for the study.

Statistical analysis: Data analysis was done entering into Microsoft excel sheet and were analysed using SPSS version 20. Data were represented in proportions and percentages. Bivariate analysis was performed using Chi-square test and Independent Samples t-test was applied to compare mean knowledge scores and attitude scores between the study groups. P-value < 0.05 was considered statistically significant.

III. Results and observations:

Of the total 400 participants (200 Medical and 200 Engineering), 59% were males and 41% were females. The mean age of MBBS and BE students was 19.25±1.17 and 19.74±1.11 respectively. (Table-1)

Table 1: Distribution of study subjects as per Age and sex

	Medical (200)	Engineering (200)	Total (400)
Male	94 (47.0%)	142 (71.0%)	236 (59.0%)
Mean Age	19.27 ± 1.18	19.75 ± 1.01	19.56 ± 1.11
Female	106 (53.0%)	58 (29.0%)	164 (41.0%)
Mean age	19.24 ± 1.16	19.72 ± 1.32	19.41 ± 1.24
Total	200 (100%)	200 (100%)	400 (100%)
Mean Age	19.25±1.17	19.74±1.11	19.50±1.16

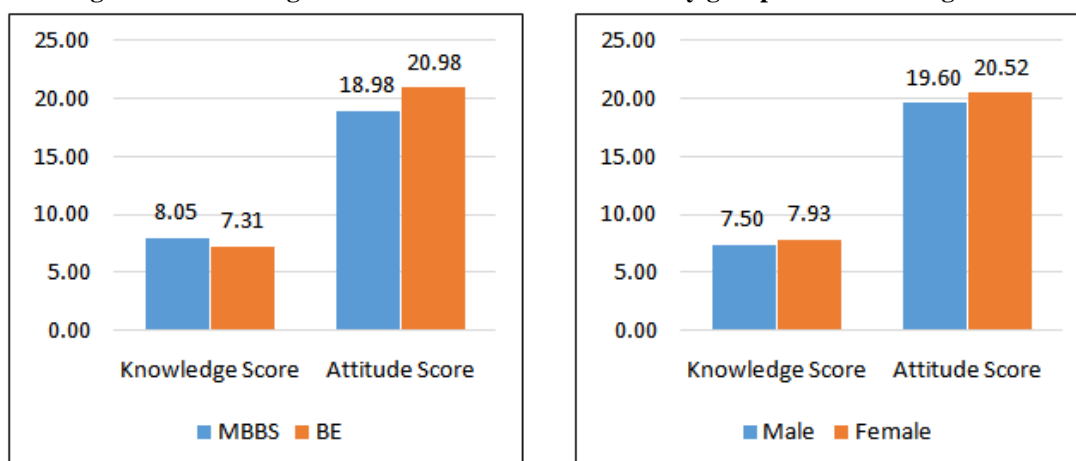
Table 2: Comparison of knowledge level and attitude levels of Medical and Engineering participants

Item	Stream	N	Mean ± SD	Mean Difference	t-value	P-value
Knowledge Score	Medical	200	8.05 ± 1.75	0.740	4.638	<0.001
	Engineering	200	7.31 ± 1.42			
Attitude Score	Medical	200	18.98 ± 3.74	-2.005	-5.669	<0.001
	Engineering	200	20.98 ± 3.32			

Table 3: Comparison of knowledge level and attitude levels in Male and Female participants

Item	Stream	N	Mean ± SD	Mean Difference	t-value	P-value
Knowledge Score	Male	236	7.50 ± 1.67	-0.437	-2.648	0.008
	Female	164	7.93 ± 1.56			
Attitude Score	Male	236	19.60 ± 4.05	-0.917	-2.471	0.014
	Female	164	20.52 ± 2.98			

Figure 1: Knowledge and Attitude levels between study groups and between genders



The mean score of knowledge on organ donation among medical students was 8.05 ± 1.75 SD and among engineering group was 7.31 ± 1.42 SD. There was a significant difference observed between these two groups (t-value = 4.638; $P < 0.001$) as shown in Table 2. Mean knowledge score in males was 7.50 ± 1.67 SD and in females 7.93 ± 1.56 SD as shown in Table 3 and was statistically significant ($P < 0.01$).

Table 4: Knowledge of participants on organ donation

Questions	Medical	Engineering	Total	Chi-Square; P-value
Heard about organ donation?	200 (100.0%)	198 (99.0%)	398 (99.5%)	2.01; P-0.156
Are you aware of any international legislation to organ donation?	83 (41.5%)	116 (58.0%)	199 (49.8%)	10.89; P-0.001
Who can donate organs?*	178 (89.0%)	158 (79.0%)	336 (84.0%)	15.924; P-0.001
For living donation who should give consent (when the donor is married)?	141 (70.5%)	54 (27.0%)	195 (48.8%)	111.722; P<0.001
Can the identity of the donor be revealed to the recipient?	113 (56.5%)	65 (32.5%)	178 (44.5%)	23.322; P<0.001
Have you heard about the donor card?	93 (46.5%)	112 (56.0%)	205 (51.3%)	3.612; P-0.057
Is it an offence to accept money or other benefits for organ donation?	100 (50.0%)	107 (53.5%)	207 (51.8%)	0.491; P-0.484
Is there shortage of organs in India for the transplant?	161 (80.5%)	174 (87.0%)	335 (83.8%)	3.104; P-0.078
Is it acceptable to harvest organs from cardiac arrest victims?	96 (48.0%)	131 (65.5%)	227 (56.8%)	12.477; P<0.001
People with a past history of alcohol or intravenous drug abuse are not eligible to receive a transplant?	75 (37.5%)	49 (24.5%)	124 (31.0%)	7.901; P<0.001
Which disease limit donation?	169 (84.5%)	97 (48.5%)	266 (66.5%)	70.438; P<0.001

* Figures are based on those correctly responded as ‘All persons dead or alive can donate organ’;

As shown in Table 4 Medical students have better knowledge with respect to “dead and alive person can donate” (89%, $P=0.001$), “consent of the donor” (70.5%, $P < 0.001$), “Disclosure of identity” (56.5%, $P < 0.001$) and “ineligibility of alcohol and drug abuse (37.5%, $P < 0.001$). Also they have good knowledge regarding a person with AIDS cannot donate (84.5%, $P < 0.001$). Surprisingly Engineering students have better knowledge about the international legislation (58%, $P=0.001$) and “harvesting from cardiac arrest victims (65.5%, $P < 0.001$). According to their opinion the most commonly donated organs and tissues are eyes (85.25%), kidney (73.5%), heart (59.5%) liver (41.5 %). There is a significant difference in both the groups and both the genders regarding the” dissection and donating organ” as organ donation ($P < 0.001$). Both the study groups were aware of the donor card but was better in females (59.1%) (P -value < 0.05).

Table 5: Attitude of participants on organ donation

Factors	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Total	Chi-Square, P-value
I would like to donate organs							
Medical	56 (28.0%)	64 (32.0%)	68 (34.0%)	6 (3.0%)	6 (3.0%)	200	13.021, P- 0.011
Engineering	51 (25.5%)	93 (46.5%)	53 (26.5%)	1 (0.5%)	2 (1.0%)	200	
Total	107 (26.8%)	157 (39.3%)	121 (30.3%)	7 (1.8%)	8 (2.0%)	400	
I would like to motivate others to donate organs							
Medical	54 (27.0%)	100 (50.0%)	31 (15.5%)	10 (5.0%)	5 (2.5%)	200	29.574, P<0.001
Engineering	105 (52.5%)	56 (28.0%)	27 (13.5%)	7 (3.5%)	5 (2.5%)	200	
Total	159 (39.8%)	156 (39.0%)	58 (14.5%)	17 (4.3%)	10 (2.5%)	400	
I would support my family members if they wish to become an organ donor							
Medical	54 (27.0%)	93 (46.5%)	36 (18.0%)	9 (4.5%)	8 (4.0%)	200	31.098, P<0.001
Engineering	105 (52.5%)	71 (35.5%)	18 (9.0%)	2 (1.0%)	4 (2.0%)	200	
Total	159 (39.8%)	164 (41.0%)	54 (13.5%)	11 (2.8%)	12 (3.0%)	400	
I would like to have a rule in India, which states that every person after death is mandatory considered as an organ donor without the need of family consent							
Medical	34 (17.0%)	59 (29.5%)	40 (20.0%)	44 (22.0%)	23 (11.5%)	200	46.411, P<0.001
Engineering	80 (40.0%)	70 (35.0%)	30 (15.0%)	14 (7.0%)	6 (3.0%)	200	
Total	114 (28.5%)	129 (32.3%)	70 (17.5%)	58 (14.5%)	29 (7.3%)	400	
I think awareness about organ donation should be made in part of school education							
Medical	70 (35.0%)	108 (54.0%)	14 (7.0%)	4 (2.0%)	4 (2.0%)	200	16.989, P- 0.002
Engineering	109 (54.5%)	71 (35.5%)	15 (7.5%)	3 (1.5%)	2 (1.0%)	200	
Total	179 (44.8%)	179 (44.8%)	29 (7.3%)	7 (1.8%)	6 (1.5%)	400	

Participant's attitude on various factors was measured using Likert scale and the results are shown in Table 5. The mean score of attitude on organ donation among medical students was 18.98 ± 3.74 SD and among engineering group was 20.98 ± 3.32 SD. and there was a significant difference observed between these two groups (t-value = -5.669; P < 0.001) as shown in Table 2.

Attitude level was also higher in females than males with mean score of females 20.52 ± 2.98 SD and males 19.60 ± 4.05 SD and it was found statistically significant (P=0.014) as shown in Table 3.

Engineering students strongly agreed to motivate others (52.5% vs 27%, P <0.001) and the family members (88% vs 73.5%, P=0.001) compared to medical participants. Majority of engineering students agreed to have a law in India making mandatory to donate organs after their death even if family members don't give consent(75% vs 46.5%, P <0.001). Males strongly agree (33.1%) to have such laws than females (22%). Quite a number of people disagreed with the rule. Similarly rule for making organ donation as a part of school education was agreed (54.5% vs 35%, P <0.001) between engineering and medical students (Table 5).

Only about 23/400 students hold a donor card. Though the proportion was very less in both the groups, family members of MBBS students (11.5%) had the higher history of organ donation as compared to BE students (5.5%).

IV. Discussion:

Chronic diseases are replacing the infectious diseases as the major cause of morbidity and mortality worldwide. Though transplantation has been practiced in India for more than 3 decades, it has been grossly inadequate in terms of actual numbers due to shortage of resource and organs. The bottleneck is the availability of organs. This has led to organ trading and organ trafficking. The problem of organ trading and trafficking can be solved by promoting cadaveric organ transplantation.^{2, 4, 13}

Public knowledge and attitude affects commitment for Organ Donation.^{2, 14, 15} Increase in knowledge should increase the attitude and practice especially in the young generation. This study is in the direction to assess the knowledge and attitude towards organ donation

In this study a total of 400 students were enrolled and satisfactory knowledge was observed in both the groups regarding organ donation similar to other studies conducted elsewhere.^{4, 5, 16-18} Item wise analysis shows

there are significant differences in their knowledge between the group and gender. Medical students have a better knowledge regarding who can donate the organs (89%). The awareness about the consent of donor (70.5%) is much better in this study compared to Jythula KY et al (56.2%)⁴ whereas keeping the identity of the donor confidential is inadequate (56.5%). The Government of India has taken numerous proactive measures like a National Helpline, National organ donation registries, development of green corridors etc.^{1,19} Surprisingly the knowledge regarding international legislation was better in both the groups (58% and 41.5%) compared to studies conducted by Sugumar JP et al, Kishore Y et al and Bapat U et al.^{1,4,11} Knowledge about donor card was much better in our study in both the groups compared other studies which was low.^{1,20-22}

Though transplantation can be done using various organs, tissues and cells; eyes (85.25%), kidney (73.5%), heart (59.5%) liver (41.5 %) were the most commonly donated organs according to their opinion.^{1,17} Awareness regarding all other tissues and organ was poor. Forbidding drug abusers, alcoholics and AIDS patients from donating the organ was very well accepted in both the groups. The knowledge was equal in both groups regarding the organ donation by way of dissection or donating organs, but small sect of medical students (9.5%) had no idea about this.

In the present study, the attitude of the engineering students was much better than MBBS students in motivating others (52.5%) and family members (88%). But, it is not as good as seen in other studies.^{1,4,5,22} They were also of the opinion of making it mandatory to donate organ even without the family members consent after death and to include it as a part of school education.^{4,23} Very few percentages of participants and families hold the donor card almost similar to other studies.^{1,4,16,18}. It was also observed that females had a better knowledge and positive attitude towards organ donation.

Finally, knowledge among the medical students was better because it is a part of curriculum whereas the attitude towards organ donation was better engineering students. There is a need for introspection as to why there is lesser attitude among medical students. More such studies will indirectly create a positive attitude when it is compared with the non medical students.

One of the limitation of this study is we did not include religion which to some extent matters about the different belief in different religion, especially life after death.

V. Conclusion:

Knowledge was equally good among both the groups, but the mean score was statistically significant in medical students and attitude was much better in engineering students. Females have better knowledge and attitude in both the groups. Introduction of the content in school education and making it mandatory to donate organs even without the consent of family members were the important aspect brought out in this study. By doing such studies we can indirectly increase the voluntariness to make the donor card and recommend the authorities to introduce it as a part of curriculum right from school education.

Reference:

- [1]. Sugumar JP, Padhyegurjar MS, Padhyegurjar SB. An interventional study on knowledge and attitude regarding organ donation among medical students. *Int J Med Sci Public Health* 2017;6:402-408.
- [2]. Hamed H, Awad ME, Youssef KN, Fouda B, Nakeeb AE, et al. (2016) Knowledge and Attitudes about Organ Donation among Medical Students in Egypt: A Questionnaire. *J Transplant Technol Res* 6: 155. doi:10.4172/2161-0991.1000155
- [3]. H.OmerTontus, MuberraKarabey, NagamanGurdal. Survey of medical student attitudes, religious beliefs, and knowledge of organ donation. *Article in Cells Tissues Organs*. August 2011; 14(3): 203-206.
- [4]. Kishore Y. JothulaSreeharshika D. Study to assess knowledge, attitude and practice regarding organ donation among interns of a medical college in Telangana, India. *International Journal of Community Medicine and Public Health*. April 2018; 5(4): 1339-1345.
- [5]. Meghana SG, Subramanian M, Atmakuri SA, Tarun S, Bera P, Nelson J. A study on knowledge, attitude and practice regarding organ donation and transplantation among final year health science students in Bengaluru, Karnataka, India. *Int J Community Med Public Health* 2018;5:1529-34.
- [6]. MaitryeeKar, DipankarBhaumik, ChinmayaKar. Body and organ donation: Perception among medical students and medical health care professionals in a Tertiary Care Centre. *International Journal of Anatomy, Radiology and Surgery*. October 2017; 6(4): A042-A047.
- [7]. Sahi M. Myths and misconceptions and reality on organ donation. *Transplantation Research*, 2014.
- [8]. K. Chakradhar, D. Doshi, B. Srikanth Reddy, S. Kulkarni, M. Padma Reddy, S. Sruthi Reddy. Knowledge, Attitude and Practice Regarding Organ Donation among Indian Dental Students: *Int J Org Transplant Med* 2016; 7 (1): 28-35
- [9]. Hamed H, ElhossenyAwad M. Knowledge and Attitudes about Organ Donation among Medical Students in Egypt: A Questionnaire. *J Transplantation Tech Res*. 2015;06(01):12-4.
- [10]. Kocaay A, Celik S, Eker T, Oksuz N, Akyol C, Tuzuner A. Brain Death and Organ Donation: Knowledge, Awareness, and Attitudes of Medical, Law, Divinity, Nursing, and Communication Students. *Transplant Proc*. 2015;47(3):1244-8.
- [11]. Bapat U, Kedlaya GP. Organ Donation, Awareness, Attitudes and Beliefs among Post Graduate Medical Students. *Saudi J Kidney Dis Transplantation*. 2009;20(1):174-80.
- [12]. Alex P, Kiran KG, Baisil S, Badiger S. Knowledge and attitude regarding organ donation and transplantation among medical students of a medical college in South India. *Int J Community Med Public Health* 2017;4:3449-54
- [13]. Valentín-Gamazo C, Malagó M, Karliova M, Lutz JT, Frilling A, et al. (2004) Experience after the evaluation of 700 potential donors for living donor liver transplantation in a single center. *Liver Transplantation* 10: 1087-1096.

- [14]. (2010)The US Organ Procurement and Transplantation Network and theScientific Registry of Transplant Recipients: OPTN/SRTR Annual Report USOrgan Procurement and Transplantation Network and the Scientific Registryof Transplant Recipients .US: Washington, US Department of Health & HealthServices,
- [15]. Prottas J, Batten H (1988) Health professionals and hospital administratorsin organ procurement: attitudes, reservations and their solutions. *Am J PubHealth* 78: 642-645.
- [16]. India Organ Donation News, NDTV. Available at <http://www.ndtv.com/topic/india-organ-donation/news> Last accessed on 21 June 2016
- [17]. Wig N, Gupta P, Kailash S. Awareness of Brain Death and Organ Transplantation among Select Indian Population. *JAPI* 2003 ; 51: 455–458
- [18]. Bapat U, Kedlaya PG, Gokulnath. Organ donation , awareness, attitudes, and beliefs among post Graduate medical students. *Saudi J Kidney Dis Transpl* 2009;21(1):174–80.
- [19]. Soni S, Samal J, Baghel SS, Vaghela S,Chundawat MS. Knowledge and attitude toward organ donation amongmedical and nonmedical (Engineering) students in Bhopal, India. *Saudi JForensic Med Sci* 2018;1:35-40.
- [20]. Alex P, Kiran KG, Baisil S, Badiger S. Knowledge and attitude regarding organ donation and transplantation among medical students of a medical college in South India. *Int J Community Med Public Health* 2017;4:3449-54.
- [21]. Adithyan GS, Mariappan M, Nayana KB. A studyon knowledge and attitude about organ donation among medical studentsin Kerala. *Indian J Transplant* 2017;11:133-7.
- [22]. Amaliyar J, Patel P. Awareness about organ donation in medical and non medical students in Patan city of Gujarat, India. *Int J Community Med Public Health* 2019;6:2435-9.
- [23]. Adithyan GS, Mariappan M, Nayana KB. A study on knowledge and attitude about organ donation among medical students in Kerala. *Indian J Transplant* 2017;11:133-7.

Conflict of interest: None declared

Acknowledgment: To the participants

Ethical approval: The study was approved by the Institutional Ethical Committee.

Manjunath GN,etal. "Knowledge and Attitude towards Organ donation among the Medical and Engineering students in Tumakuru, Karnataka." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 19(5), 2020, pp. 31-36.