

Original Research Article

A cross sectional study of knowledge and attitude of undergraduate medical students towards body donation

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ABSTRACT

Background: The best ethically acceptable source of cadavers for dissection by medical students is voluntarily donated bodies of people during their lifetime. The main objective of this research was to study the knowledge and attitude of medical students towards body donation.

Methods: This was a cross-sectional study involving undergraduate students from a medical institute of Delhi. Sample size of 281 was calculated by taking estimated prevalence of knowledge about the concept of body donation as 88%, 99% confidence interval and 5% sample error. Participants were randomly selected from each year by using random number tables. Data collection was done by using a pre-designed pre-tested semi-structured questionnaire. Data entry and analysis was done by using SPSS version 20 software.

Results: The overall knowledge about body donation among medical students was found to be poor in many aspects. Their feelings regarding body donation were mostly positive but only a small proportion (22%) were willing to do so, main reasons for unwillingness being disrespectful behaviour towards cadavers (39.7%), lack of approval by family (34.6%), not being comfortable (33.8%) and religious beliefs (18.4%). Higher levels of knowledge were found in females, but a more positive attitude was found in males and those studying in earlier years of graduation ($p < 0.05$).

Conclusions: Medical students were found to have poor knowledge about body donation with higher level of knowledge among females. Despite having positive feelings towards body donation, majority were not willing to do so.

Keywords: Body donation, Medical students, Knowledge, Attitude, Willingness

INTRODUCTION

Body donation is defined as an informed and free act of giving one's whole body after death for medical education and research.¹ Comprehensive study of anatomy of human body is an important aspect of medical education which is not feasible without dissection of cadavers by medical students. Unclaimed dead bodies are usually used for dissection purposes but the best ethically acceptable source of cadavers for

dissection is voluntarily donated bodies of people during their lifetime.²

Although with changing times, organ donation is gaining some popularity, but body donation is not widely spoken of and has a very limited acceptance.³ Hence, the present study was planned to focus on this relatively unexplored issue. Medical students have experience in cadaver dissection and they are supposed to understand its significance in medical education and research. The main

objective of this research was to study the knowledge and attitude of medical students towards body donation.

METHODS

Study type

Cross sectional study involving undergraduate medical students

Study area

Study conducted at Vardhman Mahavir medical college, New Delhi.

Study period

The study carried out from June to July 2016.

Inclusion criteria

Undergraduate students studying in all the batches of MBBS were included.

Exclusion criteria

The students not willing to participate and not giving consent were excluded.

For sample size calculation, estimated prevalence of knowledge about the concept of body donation was taken as 88% from a similar previously done study on medical students.⁴ Using 99% confidence interval and sample error of 5%, sample size came out to be 281. It was decided to take equal number of students from each year (60/year) so that there is a proper representation from all the batches. The participants were randomly selected from each year by using random number tables. All the selected participants were enrolled in the study by informing them about the purpose of research and taking their written informed consent.

Data collection was done by using a pre-designed pre-tested semi structured questionnaire containing questions about socio demographic characteristics of study subjects, their awareness and attitude about body donation and various factors affecting their attitude and motivation for body donation. The study tool was administered in the presence of one of the investigators.

Ethical issues

The participation was on purely voluntary basis. Written informed consent was obtained from the participants before enrolment in the study. Strict confidentiality and anonymity was maintained. The study was conducted in accordance with the declaration of Helsinki and ethical clearance was obtained from institutional ethics committee before starting the study.

Statistical analysis

Data entry and analysis was done by using Microsoft excel and SPSS version 20 software. The data were checked for comprehensiveness and exported to Statistical Package of Social Sciences version 20.0 and were analyzed for descriptive statistics using frequency and proportion. Knowledge of respondents was categorized as 'good', if they could correctly answer a minimum of five out of eight questions asked about body donation while if they scored less than that, their knowledge was labelled as 'poor'. Attitude of respondents regarding body donation was labelled as 'positive', if they showed a positive attitude in at least three attitude questions out of total five questions asked. Otherwise, it was labelled as 'negative.' The univariate analysis was performed using chi-square test. $P < 0.05$ was taken as significant.

RESULTS

We received a 100% response rate and all 300 participants were included in the final data analysis. The mean age of the participants was 19.3 years \pm 1.39 (range 17 to 24). 63.7% respondents were male. 60 (20%) participants each enrolled from all 5 years of MBBS. 82% of them belonged to nuclear families (Table 1).

Table 1: Socio demographic characteristics of study subjects.

Characteristics	N	Percentage (%)
Age (years)		
17-18	79	26.3
19-20	108	36.0
21-22	65	21.7
23-24	48	16.0
Sex		
Male	191	63.7
Female	109	36.3

Regarding knowledge about various aspects of body donation, eight questions were asked. A majority (87.3%) had heard of the term 'body donation', but 76% knew the actual meaning of it. The 194 (64.7%) correctly knew that the donor is the authority to give consent for body donation. Correct knowledge regarding donation of dead body of persons with HIV/AIDS, hepatitis B, disseminated tuberculosis and advanced stage malignancy was reported by 85%, 80.3%, 65% and 33.7% participants respectively. Correct knowledge that dead body of a medico-legal cannot be donated, was found in 52.3% participants (Table 2).

To assess the attitude of subjects regarding body donation, five questions were asked. When asked about their feeling regarding the act of body donation, the attitude of respondents was largely positive, with 58% mentioning it as a noble act and 31.7% as helpful for others. When asked about their thoughts about whether

the donated bodies/ dissected parts are sold, 87.3% replied in affirmation while almost 70% thought that bodies are disrespected during/after dissection. 16% believed that religion is against body donation while 81.3% believed that it is not. Less than one fourth (22%) subjects approved of body donation while 41% strongly disapproved and 37% somewhat disapproved. Out of 66 participants who were in favour of body donation, only one reported to have actually pledged for it (Table 3).

Table 2: Knowledge of participants regarding various aspects of body donation.

Knowledge domains	N	Percentage (%)
Heard of body donation	262	87.3
Know the meaning of body donation	228	76.0
Correct authority to give consent for body donation	194	64.7
Correct knowledge about donation of dead body of person with HIV/AIDS	255	85.0
Correct knowledge about donation of dead body of person with hepatitis B	241	80.3
Correct knowledge about donation of dead body of person with disseminated tuberculosis	195	65
Correct knowledge about donation of dead body of person with advanced stage malignancy	101	33.7
Correct knowledge about donation of dead body of a medico legal case	157	52.3

The 234 (78.0%) participants were not willing to donate body. When asked about the reasons for doing so, 39.7% mentioned disrespectful behaviour towards cadavers. Almost one third respondents a(34.6%) said that it is not approved by their families and almost similar proportion (33.8%) themselves were not comfortable with idea. Disapproval by the religion was mentioned by 18.4% while 23.9% said they were never thought about it (Table 4).

Table 3: Attitude of participants regarding various aspects of body donation.

Questions	Response	N	Percentage (%)
What is your feeling regarding act of the body donation	Noble act	174	58.0
	Helpful for others	95	31.7
	Don't care	31	10.3
Do you think donated bodies/dissected parts are sold for monetary gains	Never	38	12.7
	Sometimes	129	43.0
	Often	52	17.3
	Most of the times	7	2.3
Do you think donated bodies are disrespected during/after dissection	Can't say	74	24.7
	Never	91	30.3
Do you think religion is against body donation	Sometimes	66	22.0
	Often	57	19.0
	Most of the times	34	11.3
Do you approve of body donation	Can't say	52	17.3
	Yes	48	16
	No	244	81.3
	Can't say	08	2.7
Do you approve of body donation	Strongly approve	12	4.0
	Somewhat approve	54	18.0
	Somewhat disapprove	111	37.0
	Strongly disapprove	123	41.0

Age of respondents was not found to be associated with level of knowledge or attitude. Although knowledge was found to be significantly higher in females (p=0.014) but a larger proportion of males had positive attitude towards body donation as compared to females (p=0.035). As far as year of study is concerned, there was no significant difference in knowledge among students but a more positive attitude towards body donation was found in those studying in earlier years of MBBS and the proportion of subjects with negative attitude increased as the year of study progressed (p=0.004) (Table 5).

Table 5: Knowledge and attitude of participants regarding body donation according to socio demographic characteristics.

Characteristics	Knowledge (%)		Statistical remarks	Attitude (%)		Statistical remarks
	Good	Poor		Positive	Negative	
Age (years)						
17-18	55 (69.6)	24 (30.4)	Chi square=0.791, p=0.851	30 (38.0)	49 (62.0)	Chi square=6.570, p=0.086
19-20	77 (71.3)	31 (28.7)		32 (29.6)	76 (70.4)	
21-22	49 (75.4)	16 (24.6)		21 (32.3)	44 (67.7)	
23-24	33 (68.8)	15 (31.2)		8 (16.7)	40 (83.3)	

Continued.

Characteristics	Knowledge (%)		Statistical remarks	Attitude (%)		Statistical remarks
	Good	Poor		Positive	Negative	
Sex						
Male	127 (66.5)	64 (33.5)	Chi square=6.025, p=0.014	66 (34.6)	125 (65.4)	Chi square=4.433, p=0.035
Female	87 (79.8)	22 (20.2)		25 (22.9)	84 (77.1)	
Year of study						
1 st	42 (70.0)	18 (30.0)	Chi square=0.554, p=0.968	26 (43.3)	34 (56.7)	Chi square=15.521, p=0.004
2 nd	43 (71.7)	17 (28.3)		24 (40.0)	36 (60.0)	
3 rd	41 (68.3)	19 (31.7)		18 (30.0)	42 (70.0)	
4 th	44 (73.3)	16 (26.7)		14 (23.3)	46 (76.7)	
5 th	44 (73.3)	16 (26.7)		09 (15.0)	51 (85.0)	

DISCUSSION

In the present study, 87.3% medical students had heard of body donation but their knowledge was not up to the mark when subsequent questions about the topic were asked. In a similar study on medical students by Karmakar et al 88% understood the concept of body donation while in our study, this proportion was a little lesser (76%). Other studies among medical professionals have reported the awareness about body donation as 92 to 95%.⁴⁻⁶

Although a large proportion of participants were aware that bodies with infectious diseases like HIV, hepatitis B and advanced tuberculosis cannot be donated because of potential risk of infection transmission, lesser number of participants knew that bodies with advanced malignancy and medico-legal cases cannot be donated. Similar results have been found by others.⁴ This reflects that there is a need to educate medical students regarding this issue.

Almost 90% respondents had a positive feeling about the act of body donation. 58% thought of it as a noble act and almost 32% thought it as helpful for society. A study on North-east Indian medical students shows that 83% considered body donation as useful for society.⁴ Other researchers have shown that main reason in support of body donation is altruism, to help medical sciences and research.^{3,7-9} A large proportion of subjects were of opinion that bodies are disrespected during dissection and parts are sold for monetary gains. Similar results have been reported by other studies as well.^{1,4,6,10-12} The proportion of subjects willing for body donation was found to be quite small (22%) in this study. Our results are similar to other study done on medical students from South India.⁶ Other studies have reported this proportion from 6% to 67%.¹²⁻¹⁵ Only one subject from our study had actually registered for body donation which shows a major gap in attitude and practices. Karmakar et al have reported that 7.5% medical students had registered as donors for body donation.⁴

The main reasons for unwillingness for body donation were lack of family approval and not being comfortable with the idea. Religious reasons were reported by a fewer subject. Similar finding have been shown by other studies

conducted on medical students.^{1,4,5,11,12,14,16} Another study from Kenya showed that disapproval by religion was major reason for refusal to donate body.¹⁰ Alashek et al reported that lack of adequate knowledge and not being comfortable about body manipulation were main barriers for cadaveric donation.¹⁷

The present study did not find any association of age with knowledge or attitude of subjects regarding body donation. However, another study on medical students by Karmakar et al has shown knowledge was more in elder age group students while a more positive attitude towards body donation was seen in younger age students.⁴ Other authors have also reported a positive association of young age with favourable attitude towards the body donation.^{1,5,18}

In spite of higher level of knowledge among females, their attitude was not favourable for willingness to donate body as compared to males. The reasons may be that a significantly more number of females were found to be concerned about disrespectful behaviour towards cadavers and disapproval by family for body donation. Similar finding have been reported by other authors as well.^{1,5,18} However, another study from North-east India shows no difference in knowledge and attitude towards body donation among both the genders.⁴

As the year of study progresses, no change in knowledge was seen while the attitude towards body donation became more negative as compared to earlier years of study. This shows that there is a need to focus on creating awareness and motivation among medical students regarding this issue. These findings are in accordance with those reported by other authors.⁴ However, Perry et al have shown that established attitudes of medical students about body donation at level of graduate entry don't change in later years of graduation.¹⁹

Limitations

The present study was only focused on knowledge and attitude of medical students who are already supposed to be sensitized towards the issue of body donation and are not a representation of society. Further they all belonged

to a younger age group only and the attitude may be different in middle aged and elderly.

CONCLUSION

The overall knowledge about body donation among medical students was found be poor in many aspects. Their feelings regarding body donation were mostly positive but only a small proportion were willing to do so, main reasons for unwillingness being lack of approval by family, not being comfortable and religious beliefs. Higher levels of knowledge were found in females but a more positive attitude was found in males and those studying in earlier years of graduation.

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REFERENCES

1. Rokade SA, Bahetee BH. Body donation in India: a review. *Int J Res Med Sci.* 2013;1:101-5.
2. Varalakshmi KL, Kulkarni U. Life after Death: Knowledge, Attitude and Ethical Perceptions of Medical and Engineering Students on Voluntary Body Donation. *Int J Cur Res Rev.* 2020;12:187-92.
3. Sasi A, Hegde R, Dayal S, Vaz M. 'Life after Death-the Dead shall Teach the Living': a Qualitative Study on the Motivations and Expectations of Body Donors, their Families, and Religious Scholars in the South Indian City of Bangalore. *Asian Bioeth Rev.* 2020;12:149-72.
4. Karmakar N, Chakraborty T, Datta A, Nag K, Das S, Bhattacharjee P. Knowledge, attitude, and practice regarding voluntary whole-body donation among medicos in Northeast India. *CHRISMED J Health Res.* 2020;7:103-9.
5. Rokade SA, Gaikawad A. Body donation in India: social awareness, willingness and associated factors. *Anat Sci Educ.* 2012;5(2):83-9.
6. Ballala K, Shetty A, Malpe SB. Knowledge, attitude, and practices regarding whole body donation among medical professionals in a hospital in India. *Anat Sci Educ.* 2011;4(3):142-50.
7. Jiang J, Zhang M, Meng H, Cui X, Yang Y, Yuan L et al. Demographic and motivational factors affecting the whole-body donation programme in Nanjing, China: a cross-sectional survey. *BMJ Open.* 2020;10(9):e035539.
8. Ajita R, Singh YI. Body donation and its relevance in anatomy learning-a review. *JASI.* 2007;56(1):44-7.
9. Fennell S, Jones DG. The bequest of human bodies for dissection: a case study in the Otago Medical School. *N Z Med J.* 1992;105(946):472-4.
10. Mwachaka PM, Mandela P, Saidi H. Repeated Exposure to Dissection Does Not Influence Students' Attitudes towards Human Body Donation for Anatomy Teaching. *Anat Res Int.* 2016;2016:9251049.
11. Dope SA, Amanrao BP, Kulkarni PR, Diwan CV. Body Donation- The life after Death. *Med Pulse Int Med J.* 2015;2(4):216-20.
12. Asl JA, Nikzad H, Taherian A, Atlasi MA, Naderian H, Mousavi G et al. Cultural acceptability and personal willingness of Iranian students toward cadaveric donation. *Anat Sci Educ.* 2017;10(2):120-6.
13. Kohli M, Tapas S. Body Donation-A noble cause. *Ind J Basic Appl Med Res.* 2018;7(3):330-34.
14. Saha A, Sarkar A, Mandal S. Body Donation after Death: The Mental Setup of Educated People. *J Clin Diagn Res.* 2015;9(6):5-9.
15. Hiwarkar MP, Kulkarni YR. 'Voluntary body donation' - a survey of awareness among teaching staff of medical colleges in Nagpur. *Indian J Clin Anat Physiol.* 2016;3(3):318-21.
16. Ajita R, Singh YI. Body Donation and Its Relevance in Anatomy Learning-A Review. *J Anat Soc India.* 2007;56:1-6.
17. Alashek W, Ehtuish E, Elhabashi A, Emberish W, Mishra A. Reasons for unwillingness of Libyans to donate organs after death. *Lybian J Med.* 2009;4(3):110-3.
18. Boulware LE, Ratner LE, Cooper LA, LaVeist TA, Powe NR. Whole body donation for medical science: a population-based study. *Clin Anat.* 2004;17(7):570-7.
19. Perry GF, Ettarh RR. Age modulates attitudes to whole body donation among medical students. *Anat Sci Educ.* 2009;2(4):167-72.

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