

# Voluntary Body Donation–Knowledge and Perspectives among Healthcare Workers in Southern India

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## ABSTRACT

**Introduction:** Cadaveric dissection is an integral part of teaching anatomy. In a developing country like India, where many medical institutions are on the cusp of growth, procuring cadavers leads to a great challenge. The major source of cadavers is unclaimed bodies, followed by a meagre number by the way of voluntary body donation. It is the call of the hour to encourage people to go in for voluntary body donation.

**Aim:** To document legal and in-depth knowledge and attitude about body donation among healthcare professionals.

**Materials and Methods:** This was a cross-sectional study conducted during October 2017-August 2018. A prevalidated, semistructured questionnaire was used to assess the knowledge and attitude among 75 medical professionals and 75 healthcare assistants at Pondicherry institute of medical sciences-a tertiary care hospital in Pondicherry, India. Data was analysed by descriptive statistics using SPSS statistical version 21 for windows, and results expressed as percentage of the total study population. The Chi-square test was used to compare variables between doctors and health care assistants and p-value <0.05 was considered as significant.

**Results:** Even though 96.7% of healthcare professionals were aware of body donation, only 65.3% doctors had adequate

knowledge about legal aspects. This was much low among healthcare assistants (38.7%). All participants accepted that body donation enhances medical advancement, but only 17% of doctors were willing to donate. On the contrary, 47% of doctors and 40% of health care assistants expected the general public to donate ( $p=0.02^*$ ). Although many influencing factors, 68.7% (75% doctors and 62% health care assistants) inferred that religion was not a barrier and participants of extreme ages (22.5 and 22%) were willing to engage in this altruist act. The major psychological frontier was depersonalisation of self by dissection of his or her own body (63% among doctors).

**Conclusion:** The study revealed that lacunae regarding the legal aspect of body bequeathing prevail among health care professionals that need to be curtailed by providing adequate knowledge through seminars and continuing medical education programs aiming to healthcare professionals including healthcare assistants who bridge the gap between the medical professionals and common people. So, the Reflection of knowledge and attitude of health care assistants are also considered crucial for winning the noble theme of "voluntary body donation." Breaching the psychological barrier, depersonalisation of self and motivation would be the dawn of voluntary body donation.

**Keywords:** Anatomical act, Body bequest, Health care professionals, Psychology

## INTRODUCTION

The cadaveric dissection is the epitome of medical education as it fulfils all the domains of learning [1]. In true sense it facilitates a higher level of learning, that is, perception and interpretation. Because of which cadaveric dissection remains to be the spine of anatomy learning [2]. The "Anatomical Act" was established by many states of India, which helps the medical colleges to procure cadavers for dissection.

Unclaimed bodies remain to be the major source of cadavers in medical education and body bequest remains to be meagre [3]. Body donation became sublime because of the lack of awareness among the common public due to superstitions and unawareness [4]. The medical profession stands still without dissection, but the perception and attitude toward body donation among this community is also questionable.

There is a gap between medical professionals and common people regarding the awareness of body donation [3]. Many factors such as age, religion, cultural variations, personality differences, views regarding death and mortality, body image concerns, and humanitarian values can have an influence on peoples' mindset toward body bequest [5]. A voluntary body donation is an act of conferring one's body for medical teaching and research. It denotes a determined mind and a pious soul dedicated to help humanity through medical sciences [1]. The attitude of potential donors and

their relatives toward body donation is the major influencing factor for the procurement of donor bodies.

The prime beneficiary of this noble act is the doctors who should be expected to be beyond social, cultural stigma, and fear of body donation. Many studies were reported to assess the knowledge, attitude, and practice of whole body donation among the people of different social and cultural backgrounds [6,7]. Basic knowledge of voluntary body donation is not suffice in achieving willed individuals into voluntary body donors, it also includes legal knowledge [8].

The study highlights the legal knowledge and attitude regarding whole body donation among the gamut of the healthcare system in India, including the healthcare assistants, whose role is crucial in bridging the lacunae between the doctor-patient relationships.

## MATERIALS AND METHODS

This was a cross-sectional study conducted from October 2017-August 2018, at Pondicherry Institute of Medical Sciences, Pondicherry, India, among healthcare professionals who were medical graduates, postgraduates, super specialists and healthcare assistants including staff nurses and nursing faculties. As it was designed to assess the in-depth knowledge regarding body donation among health workers, anatomists, and forensic experts, who might be well-aware, were excluded.

The sample size was 150, calculated by the formula  $N = Z^2 pq/d$ ,  $P = 50\%$ , i.e., anticipated prevalence of adequate knowledge,  $q = 1 - p$ ,  $d = 8\%$  i.e., absolute precision and desired confidence level of 95%. The sample was equally proportionated among the doctors and health care assistants ( $n=75$  in each group). A validated semi-structured questionnaire adapted from Ballala K et al., was used [6]. Modification of item pertaining to legal aspect of body donation was done (Item 8) and validated through five senior professors of anatomy and five senior professor of forensic medicine, pretested it by a pilot study. The validity and reliability measure showed Cronbach's alpha value of 0.821, Content Validity Ratio (CVR) was determined to be 0.8.

After obtaining institutional human ethics committee approval (No: IEC RC/17/53), participants were chosen by systematic random sampling and ensured that their participation was purely voluntary. Consent was taken after explaining the purpose of the study, a maximum of three attempts was made to collect the completed questionnaire by one of the investigators.

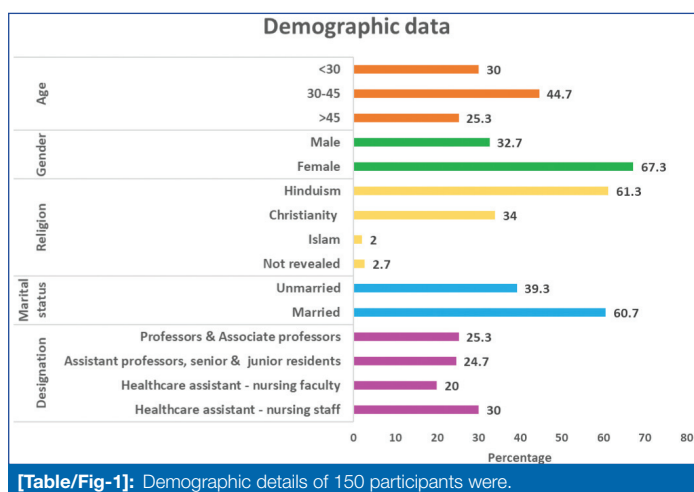
The questionnaire included demographic details like age, gender, religion, marital status, and designation. Of the 19 questions, participant's legal knowledge about voluntary body donation was assessed by five questions scored as 1 point for every correct answer and 0 for every incorrect answer. Participants who scored more than 2 were considered as having adequate knowledge in legal aspects and those scoring 2 and less than two were considered not having adequate knowledge about legal aspects. The remaining questions helped in understanding basic knowledge (seven questions) and attitude (seven questions) of body bequest.

### STATISTICAL ANALYSIS

The data obtained were analysed through descriptive statistics using SPSS statistical version 21 for windows, and the results were expressed as percentage of the total study population. Graphical and tabular representations of the data were obtained from Microsoft Excel 2010. The Chi-square test was used to compare variables between doctors and health care assistants and p-value <0.05 was considered significant.

### RESULTS

The demographic data [Table/Fig-1] reveals that the study population consisted of more female population (67.3%), married (60.7%), belonging to Hindu religion (61.3%) and middle aged group.



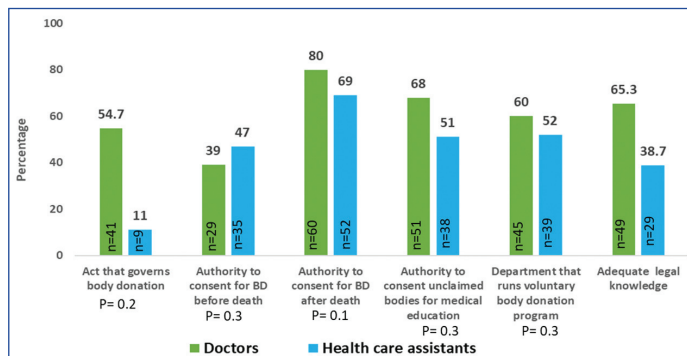
[Table/Fig-1]: Demographic details of 150 participants were.

A major percentage (96.7%) of the study participants was aware of the term "voluntary body donation". Anatomy classes shoulder the major role in inculcating awareness among healthcare workers (51%) [Table/Fig-2].

Only, 65.3% of doctors and 38.7% of health care assistants possessed adequate knowledge regarding the legal aspects of voluntary body donation [Table/Fig-3].

S. no	Questions	Responses n & (%)			p-value
		Doctors	Healthcare assistants	Healthcare professionals (over all)	
1.	Do you know various sources from which bodies are obtained for the purpose of anatomical dissection?				0.2
	Yes	60 (80)	62 (82.7)	122 (81.3)	
	No	15 (20)	13 (17.3)	28 (18.7)	
2.	Have u heard of the term body donation?				0.6
	Yes	73 (97.3)	72 (96)	145 (96.7)	
	No	2 (2.7)	3 (4)	5 (3.3)	
3.	From which of the following source did you hear about body donation?				0.4
	Anatomy classes	35 (45.3)	44 (56)	79 (51)	
	News paper	9 (12)	3 (6.7)	12 (9)	
	Electronic media	15 (20)	13 (17.3)	28 (18.8)	
	Social media	16 (22.7)	15 (20)	31 (21.2)	
4.	Why do you think would someone donate his/her body?				0.4
	Medical education & research	62 (82.6)	41 (54.6)	103 (68.6)	
	Monetary benefits	2 (2.7)	8 (10.7)	10 (6.7)	
	Organ harvesting	11 (14.7)	26 (34.7)	37 (24.7)	
5.	Do you believe that donated bodies are disrespected at dissection hall?				0.2
	Yes	20 (26.7)	13 (17.3)	33 (22)	
	No	52 (69.3)	49 (65.3)	101 (67.3)	
	Do not know	3 (4)	13 (17.3)	16 (10.7)	
6.	Donors are screened for diseases before voluntary body donation.				0.3
	Yes	35 (47)	53 (70)	88 (58.7)	
	No	25 (33)	14 (19.3)	39 (26)	
	Do not know	15 (20)	8 (10.7)	23 (15.3)	
7.	Are you aware that body donation program exists in our institution?				0.3
	Yes	37 (49.4)	46 (61.3)	83 (55.3)	
	No	38 (50.6)	29 (38.7)	67 (44.7)	

[Table/Fig-2]: Question on knowledge variable on voluntary body donation. Chi-square test, p<0.05\* statistically significant



[Table/Fig-3]: Questions on legal aspect of voluntary body donation. \*BD: Body donation; Chi-square test; p<0.05\* statistically significant

The above 5 questions helped in assessing the legal knowledge pertaining to voluntary body donation [Table/Fig-3].

Gender made no difference regarding the legal aspect of voluntary body donation [Table/Fig-4].

Gender*	Male%	Female%	Total%	p-value
Doctors	37.9	27.4	65.3	<0.05*
Health care assistants	17.4	21.3	38.7	

[Table/Fig-4]: Gender variation regarding adequate knowledge on legal aspects of voluntary body donation. Chi-square test; p<0.05\* statistically significant

Doctors (75%) and healthcare assistants (62%) documented that the religion was not a barrier to body bequest [Table/Fig-5].

A vast percentage (63%) of doctors believed that de-personalisation or dissecting his/her own body hinders voluntary

S. no.	Questions	Doctors n & (%)	Health care assistants n & (%)	p-value
1.	Willingness to donate.	13 (17)	16 (21)	0.1
2.	Religious belief not restricting body donation.	56 (75)	47 (62)	0.2
3.	Thought of being dissected will affect body donation.	58 (63)	27 (38)	0.1
4.	Money incentives will not affect body donation	73 (97)	59 (78)	0.5
5.	Body donation helps medical progression and future generation.	75 (100)	75 (100)	Not comparable
6.	Expecting general public to donate	34 (47)	30 (40)	0.02*
7.	Body donation by familiar person will not affect my decision	52 (70)	68 (90)	0.4

**[Table/Fig-5]:** Attitude of health care professionals towards voluntary body donation. Chi-square test;  $p < 0.05^*$  statistically significant

body donation; however, 62% of healthcare assistants denied the same.

A good percentage (88%) of participants (97% of doctors and 78% of healthcare assistants) perceived that the incentives had a minimal role in this noble act.

Although all participants accepted that body donation enhances medical advancement [Table/Fig-5], only 17% of doctors were willing to donate. On the contrary, 47% of doctors and 40% of health care assistants expected the general public to lead this altruistic act. Statistically, this showed a significant p-value ( $p = 0.02^*$ ) using Chi-square test. This noble act will not be influenced by practicing body donation by familiar person.

Comparing willingness for body bequest and age, 55.5% (30-45 years) showed negativity while younger age group (< 30 years) and senior professors of advanced age (>45 years) expressed positivity with 22.5% and 22%, respectively.

## DISCUSSION

Cadaveric dissection is expected to enhance all three domains of learning: psychological, visual, and kinaesthetic skills and it remains the best teaching modality for anatomy, amidst all technical advancements [9]. There exists an ideology of replacing cadaveric dissection with modern technology, but it was documented that the emotional distress of cadaveric dissection would inculcate ethical values and morals of humanity in future doctors [10]. Unclaimed bodies were used as an extensive source of cadavers for the teaching purpose, although it was unethical in the truest sense [11]. According to the anatomist Gareth Jones, the usage of unclaimed bodies is anatomy's shameful inheritance [12].

With emerging ethical issues and poor quality of cadavers, concerning to unclaimed bodies, stakeholders of anatomy drift towards promoting voluntary body donation at all levels of the health system [13]. It could be succeeded, when healthcare professionals motivate the people, expecting a change in a society that has accepted blood donation, and organ donation as a glorified act of men to his fellow humans, although voluntary body donation which is still at its infancy [1].

In the present study, 96.7% of healthcare professionals were aware of body donation, but lacunae in the legal aspect were evident. Only 65.3% of doctors and 38.7% of healthcare assistants were aware of the legal act and the issues pertaining to it. According to Hiwarkar PM et al., many of the medical staff members were not aware about the anatomy act that governs body donation and also unaware of the cadaver donation procedure. The results of the present study were in congruence with that of Hiwarkar PM et al., [14].

Aneja PS et al., mentioned that there was a lack of knowledge in legal and procedural details among women doctors; however, the present study did not reveal any such difference [1]. According to the present study, more than half of the healthcare professionals were aware of consent for body donation after death (80% doctors & 69% health care assistants) and unclaimed bodies (68% doctors & 51% health care assistants). Since unclaimed bodies and donation of body after death by other relatives were the primary source of cadavers for medical teaching, knowledge about that was sound, than the voluntary body donation [11].

Lack of legal knowledge is an encumbrance in the process of transmuting a wilful individual to a voluntary donor [1]. Even though voluntary body donation is a wilful donation of one's own body after death, the donor takes this altruistic decision of body donation and signs the consent before his/her death after consulting with his or her family. Less than half of health care professionals were (39% doctors & 47% health care assistants) aware of the legal authority for body donation before death. Knowledge about this is the cornerstone of enhancing voluntary body donation. This was parallel to the study by Larner SP et al., [15]. A 60% & 52% of doctors and health care assistants respectively were aware of the department that runs voluntary body donation and only 55.3% were cognizant about the existence of body donation program. All the above findings, portend the higher probability of donor being misguided from the noble path of body bequest. Inferences from the present study emphasise the need for conducting awareness programs regarding legal and ethical aspects of body donation for stakeholders in the spectrum of healthcare, that is, doctors, nurses, community health workers, NGOs, etc. This parallels the study carried out by Saritha S et al., [16].

A 67.3% of healthcare professionals believe that the cadavers were handled with respect in the dissection hall. Not all donors are suitable for body bequeathing. To avoid risks; procuring personnel and medical investigators screen the donors for infectious diseases [17]. Doctors (47%) and health care assistants (70%) were aware of this fact. The efficacy of organ donation has reached the public through extensive campaigns by the government and NGOs. One could save seven lives by organ donation, but by body bequest, a generation of medical graduates would be enlightened, thereby helping in building a healthier society [18]. According to healthcare professionals (51%), awareness about body donation was gained through anatomy classes. The role of other media was not very significant. In this galvanised era of technology, powerful social media should shoulder the responsibility of this altruistic act. This synchronises with the results of the study by Saha A et al., [4].

Numerous factors and attitudes of healthcare professionals play a vital role in bringing voluntary body donation into practice. Factors that baffle body bequest are demographic, cultural, sexual, attitudinal, and religious [19]. All the participants (100%) believed that body donation enhances medical advancement, however, only a meagre (17% doctors & 21% health care assistants) were willing to donate their bodies. In the present study, participants of extremes of age, healthcare assistants of younger age group ( $\leq 30$  years), and senior professors of advanced age ( $\geq 45$  years) showed eagerness for body bequest (22.5 and 22% each). The major proportion of healthcare workers (55.5%) took part in the study were not willing to be a part of this altruistic act. This was in contrary to the study by Dope SA et al., where willingness to donate body accentuated as the age advanced [7].

Obliging to body bequest was questionable among health care professionals, on the contrary, a significant percentage of doctors (47%) and healthcare assistants (40%) expected the general public to donate and that analysis showed statistically significant p-value ( $p = 0.02^*$ ). These findings matched with the inferences of Ballala K et al., and McClea K and Stringer MD [6,20]. Why this irony? Why has not the situation changed even after a decade? Analysis of this led

to a new trail called the psychological frontier and depersonalisation of individuals through dissection [21].

Dissection could negatively influence healthcare professionals towards wilful body donation [1]. The results of the current study proved it again. Healthcare professionals, especially doctors (63%), opined that the thought of their own body being dissected appeared as a roadblock towards body bequest, but 62% of the health care assistants denied the same. This disparity might be because of the minimal contact hours with cadavers in their curriculum.

The renaissance of voluntary body donation lies in the fall of this psychological barrier among healthcare stakeholders. How could it be achieved? Although it was a routine practice in Korea, Thailand and, recently, in many Indian medical schools, various ceremonies like disrobing and robing of cadaver and honouring the holy soul who donated themselves to enlighten the knowledge of medical students, have become a part of anatomy dissection from the first day of the professional journey [22-24]. Rituals of this sort were not familiar among clinicians and others in the healthcare spectrum in the earlier period. As mentioned before, mass campaigns and awareness programs alone may not be sufficient, but familiarising programs like "my first patient, disrobing of the cadaver, and cadaveric oath", might not only enlighten them but also help in overcoming the psychological barriers, to accomplish the practice of body bequeath [24].

The participants (97% of doctors and 78% of healthcare assistants) were of the belief that incentives could tarnish this noble act. This was in accordance with Dope SA et al., and Ajita R et al., [7, 17]. The effect of the mass campaign and the influence of luminaries were mean among healthcare workers, as participants' (80%) willingness to donate their bodies would not be influenced by them [6].

### Limitation(s)

The present study did not reflect the insights of the anatomists regarding body donation, as they were excluded from the present study. As it was designed to assess the knowledge regarding body donation among health workers, the anatomists, and forensic experts, who might be well-aware, were excluded.

Also, Public Relations Officers (PROs) who bridge the community and the health workers were not included.

### CONCLUSION(S)

Awareness about body donation mandates in-depth knowledge, including the norms and legal aspects, which is crucial to educate and guide the willing donor in the right way for the anatomical gift. The lacunae pertaining to the legal aspect of body donation should be filled effectively through CMEs. All the stakeholders of the healthcare system need to be enriched with legal knowledge about body donation. Initiatives that honour the donor, not only help in inculcating ethical values among medical students but also breach the psychological barrier. Awareness, self-motivation, cadaver-honouring ceremonies, voluntary organisation, and social media play a significant role in bringing a change in the attitude of health

care workers regarding body donation, and this metamorphosis will be reflected among the public.

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