



Undergraduate Medical Students' Knowledge, Attitude and Awareness towards Body Donation: A Cross-Sectional Study

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ABSTRACT

Background

Cadaveric learning plays a pivotal role in understanding human anatomy, enhancing both the medical and surgical skills of medical students. While the demand for cadavers to train medical and paramedical students is increasing, the supply continues to decline. Given that institutional cadavers are sourced entirely through voluntary body donation, evaluating the knowledge, attitudes, and awareness of MBBS students toward this practice is the objective of this study, as they have direct, firsthand experience with cadaver-based medical education.

Methods

A descriptive cross-sectional study was conducted among undergraduate medical students of Arunai Medical College & Hospital with the sample size of 450 across phases 1, 2, and 3 using a validated, Google Forms-based questionnaire containing both closed- and open-ended items to assess their perceptions of voluntary body donation with the study period of 2 months duration from Jan to Feb 2025. Data were analyzed using descriptive statistics.

Results

Although 82.7% of participants were familiar with voluntary body donation programs, only 25.2% of respondents were in favor of pledging their own bodies for donation. Conversely, 83.5% expressed a willingness to actively participate in awareness drives for voluntary body donation.

Conclusions

Our findings suggest that incorporating dedicated lectures on voluntary body donation, procedural skills, and the fundamentals of the 'Anatomy Act' including its legal complexities into the medical curriculum can positively shift medical students' perceptions and attitudes toward body donation.

Keywords: Cadaver; Procurement; Anatomy; Medical; Students.

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INTRODUCTION

Body donation is an informed, autonomous act of dedicating one's entire body after death for medical education and research. A critical shortage of cadavers exists across Indian medical schools, with available numbers meeting less than 50% of institutional requirements.¹ Although voluntary body donation programs could provide an important source of cadavers, a persistent gap remains between increasing educational demand and declining supply. Despite advances in alternative methods of anatomy teaching, cadaveric dissection remains indispensable. Community attitudes toward donation are strongly influenced by religious and cultural traditions.² This deficit has been worsened by the rapid growth of government and private medical colleges and increasing student enrolment.³ Competent surgical and clinical practice depends on thorough anatomical knowledge best acquired through cadaveric dissection.⁴ Therefore, fostering positive attitudes among medical students⁵ and assessing their baseline knowledge, attitudes, and awareness regarding body donation are essential, as they are the primary stakeholders in cadaver-based education.

METHODS

Study Area

This study was conducted in Arunai Medical College & Hospital, Tiruvannamalai, India.

Study Design

Descriptive cross-sectional study design was used to measure existing KAP (knowledge, attitude and perception) levels among MBBS students at one point in time, efficiently and anonymously, using a validated questionnaire for comparability, rather than testing an intervention.

Population, Sample Size and Sampling

The study population comprised Phase I, II, and III MBBS students at AMCH. A total sample size of n=450 students was selected using Convenience sampling technique.

Inclusion and Exclusion criteria

Students enrolled in paramedical or non-MBBS

courses were excluded from the study.

Data Collection

The study was conducted for 2 months from Jan to Feb 2025 among Phase I to Phase III MBBS students across three academic years (2021-2022, 2022-2023, and 2023-2024). Participant demographic details and personal perspectives regarding body donation were collected using a combination of open- and closed-ended questionnaires. To ensure methodological rigor and allow for direct regional comparisons, a validated questionnaire framework previously developed by *Kumar et al.*, was adapted for this survey.³ The core items of the original instrument were uniquely suited for our study population as they were specifically designed to capture the nuances of voluntary body donation perceptions among undergraduate medical students. The core attitudinal and conceptual items addressing knowledge, awareness, and willingness to pledge or advocate for body donation were maintained verbatim from the original validated instrument to ensure data comparability. The questionnaire was hosted on Google Forms and distributed simultaneously by the authors via link sharing within the students' respective phase-specific WhatsApp groups during scheduled lectures. To minimize participant bias, the primary objectives of the study were explicitly detailed at the beginning of the questionnaire. Utilizing a convenience sampling method, all students who completed and submitted the questionnaire within the designated timeframe were included in the study. Student anonymity and data confidentiality were strictly maintained throughout the process.

Data Analysis

Collected data were initially compiled into a Microsoft Excel spreadsheet, and only fully completed questionnaires were exported and analyzed for comparative evaluation using SPSS software (Version 22.0).

RESULTS

The Google Forms-based questionnaire was distributed to all 450 targeted students, yielding a

sample size of 151 respondents. Among these, 127 (84.1%) provided explicit consent to participate in the study. Analysis of the demographic data revealed that 73 (41.8%) of the respondents were male and 78 (58.2%) were female. The median age of the participants was 20 years, spanning a range of 17 to 37 years. Regarding religious affiliation (which was designated as a non-mandatory question), 139 (92.2%) of the participants identified as Hindu, 6 (3.9%) as Christian, and 6 (3.1%) as Muslim. Evaluation of the participants' prior awareness regarding the voluntary body donation program demonstrated that 82.7% were familiar with the concept, whereas 17.3% reported an insufficient understanding of it. To identify their primary sources of information regarding voluntary body donation, a multiple-response checklist was provided. Among the respondents, 28.3% acquired their information from miscellaneous sources, 24.4% from electronic media, 15.7% from newspapers, and 14.2% reported having attended a previous awareness program. (Table 1).

Table 1: Source of knowledge regarding the body donation program (n=151).

Source of knowledge	Frequency n (%)
Social Media	43 (28.3)
Relatives	8 (5.5)
Friends	12 (7.9)
Magazines	6 (3.9)
Newspapers	24 (15.7)
Electronic Media	37 (24.4)
Awareness Program	21 (14.2)

However, 94.5% of the participants were unaware of the specific procedures for pledging a body for donation, as well as the appropriate authorities to approach. The remaining 5.5% of participants who were familiar with the process indicated that they would approach government hospitals, tertiary institutions, or non-governmental organizations to initiate a donation. Additionally, 95.3% of the participants were unaware of the documentation required to pledge a body. Conversely, the remaining 4.7% correctly noted that identification proof, consent forms, death certificates, and witness

signatures are necessary prerequisites for the process. Regarding personal intent, 25.2% of the respondents were in favor of pledging their own bodies for donation, 18.1% were skeptical, and 56.7% remained undecided. Despite this, 48.8% of the cohort indicated that their decisions might change in the future. Furthermore, while 38.6% of the respondents expressed a willingness to encourage family members, relatives, and friends to donate their bodies, 61.4% were unsure. Interestingly, 48.0% of the participants noted that their perspectives on body donation would positively alter if cadavers were treated with empathy during dissection and properly cremated afterward. An overwhelming majority of the participants (92.9%) expressed an interest in enrolling in voluntary body donation awareness campaigns, with 83.5% willing to participate actively. Finally, respondents were presented with an open-ended question regarding strategies to increase voluntary body donation in India. Thematic analysis of these qualitative responses revealed that structured awareness campaigns should be systematically implemented for both the general public and healthcare professionals.

DISCUSSION

The debate surrounding the efficacy of cadaveric dissection versus alternative instructional methods has persisted throughout the history of medical education. The recent scarcity of cadavers for dissection and demonstration has intensified the need to understand the underlying causes of this deficit alongside public perspectives on the matter.⁶ Although computer-assisted and virtual modalities offer distinct advantages to learners, hands-on cadaveric handling during dissection remains crucial; utilizing human tissue as an active learning tool is increasingly recognized as a foundational competency for shaping students' professional attitudes and bioethics qualities they will ultimately manifest in patient care.⁷

In India, the majority of cadavers utilized for anatomical dissection are unclaimed bodies allocated by state governments through the Directorate of

Medical Education, supplemented by voluntary body donation programs. A systematic increase in voluntary body donations would effectively mitigate this acute shortage. Consequently, the current study was conducted to evaluate the perceptions of medical students regarding voluntary body donation programs, given that they represent the primary academic cohort utilizing these vital resources.⁸

Consistent with most domestic literature, our findings demonstrated that a substantial majority of participants were familiar with the concept of voluntary body donation, with an awareness rate of 82.7% observed in our cohort. Approximately 14.2%

of the respondents identified institutional awareness programs as their primary source of information, whereas comparable studies have identified print and mass electronic media as the leading modalities of public exposure.^{3, 6, 9, 10} Crucially, our findings revealed that a significant majority of participants (94.5%) were unaware of the specific protocols required to execute a donation^{3,9}, while 95.3% lacked knowledge regarding the necessary documentation and appropriate legal authorities to contact. These patterns of procedural unfamiliarity align closely with data reported across other Indian institutional studies.^{3,6} (Table 2).

Table 2: Comparison of the present study with similar studies on familiarity with the voluntary donation program, procedure of pledging, and documentation (n=151).

Study	Familiarity (%)	Ignorant about the procedure (%)	Unaware of documentation (%)
Present Study	82	95	95
<i>Karmakar et al.</i>	88	38	-
<i>Mundra P et al.</i>	90	100	-
<i>Kumar Gosh et al.</i>	88	87	65

The proportion of participants in favor of pledging their bodies for donation was notably low at 25.2%; in contrast, a comparable study conducted in Kolkata reported a significantly higher approval rate of 52.0%.³ Our findings revealed that 18.1% of respondents were opposed to body donation, while 56.7% remained undecided (Table 3).

Table 3: Comparison of the present study with similar studies on participants' favour towards pledging for voluntary body donation (n=151).

Study	Favour of Pledging (%)	Not in Favour (%)	Not Yet Decided (%)
Present Study	25	18	57
<i>Karmakar et al.</i>	24	-	-
<i>Mundra P et al.</i>	10	89	-
<i>Kumar Gosh et al.</i>	52	39	9

Interestingly, a subset of these undecided participants indicated a willingness to modify their perspectives based on the ethical handling of cadavers during dissection and the implementation of respectful post-dissection cremation practices. Conversely, alternative regional literature has demonstrated that up to 89.0% of participants remain strictly opposed

to donating their bodies under any circumstances.¹⁰ Our research revealed that 38.6% of the participants were willing to advocate for body donation programs to their relatives and friends. In comparison, prior literature has reported substantially higher rates of program endorsement among medical students.^{3, 9} Interestingly, while the proportion of individuals personally willing to donate their bodies or encourage others to do so was relatively low, the number of respondents eager to volunteer for voluntary body donation awareness drives and associated institutional activities was remarkably high. This favourable inclination toward public advocacy aligns with the sparse existing literature, which notes that very few medical students actively refuse to participate in such awareness campaigns.^{3, 9, 10} (Table 4).

Table 4: Comparison of the present study with similar studies on willingness to participate in awareness programs of voluntary organ donation (n=151).

Study	Willingness to participate in awareness program (%)
Present Study	92.50

<i>Karmakar et al.</i>	81.50
<i>Mundra P et al.</i>	49.00
<i>Kumar Gosh et al.</i>	23.50

The consensus across the literature, including our current study, indicates that fostering comprehensive awareness among healthcare professionals, medical students, and the general public represents the most effective strategy to optimize participation in voluntary body donation programs.

Limitations

This study is limited by a modest response rate of 33.6%(n=151/450), which introduces potential volunteer bias and self-selection bias among the different training phases. Because participation was entirely voluntary, the study cohort may not be fully representative of the overall knowledge, attitudes, and awareness of the institution's entire undergraduate medical student body, thereby restricting the external validity of our conclusions.

Conclusions

Body donation represents a deeply compassionate and selfless gesture by individuals seeking to contribute to medical science and the living after death. Incorporating structured lectures on voluntary body donation, relevant procedural skills, and the fundamentals of the "Anatomy Act" including its associated legal complexities into the medical curriculum can fundamentally shift the perceptions and attitudes of medical students. Furthermore, extensive public awareness campaigns, orchestrated with the active participation of religious authorities, community leaders, and political and media figures, with medical schools acting as nodal centres, are vital to fostering widespread public understanding and acceptance of body donation.

Ethics approval

The ethical approval for this study was obtained from the Institute Human Ethical Committee, with reference number: 005/3881/2025. All participants provided digital informed consent. The participants' anonymity was kept. The information obtained from them was used purely for the purpose of the study and was kept strictly confidential.

Declaration of Helsinki statement

The authors confirm that the research was done in accordance with the Ethical Principles for Medical Research Involving Human Subjects, outlined in the Helsinki Declaration of 1975 (revised 2013, <https://www.wma.net/policies-post/wma-declaration-of-helsinki-ethical-principles-for-medical-research-involving-human-subjects>).

Conflict of interest

The author declares no conflict of interest.

Funding

No funding was received from any agency for conducting this study.

Availability of data and materials

The collected data and detailed analyses will be made available upon reasonable request from the corresponding author.

Author contributions

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Citation: Nancy T A, Mohan D, Shankar G. Undergraduate Medical Students' Knowledge, Attitude and Awareness towards Body Donation: A Cross-Sectional Study. *J Coll Med Sci-Nepal*. 2026 Sep. 30;22(3):251-6.