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Impact of an Educational Intervention on Knowledge, Attitudes, and Perceptions of First-Year MBBS Students Toward Body and Organ Donation

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ABSTRACT

Background: Body and organ donation are indispensable for medical education and healthcare delivery. Despite their importance, donation practices remain limited due to sociocultural, religious, ethical, and informational barriers, particularly in developing countries like India. Medical students, as future healthcare providers, play a crucial role in promoting awareness and acceptance of donation practices. Early educational interventions may help bridge knowledge gaps and foster positive attitudes.

Aim: To assess the impact of a structured educational intervention on knowledge, attitudes, and perceptions regarding body and organ donation among first-year MBBS students.

Materials and Methods: A prospective interventional study was conducted among first-year MBBS students at Smt. Kashibai Navale Medical College and General Hospital, Pune, India, from August to September 2023. A structured, validated questionnaire assessing demographic details, knowledge, attitudes, and perceptions related to body and organ donation was administered before and after a two-hour interactive educational session delivered by anatomy faculty. Pre- and post-test knowledge scores were compared using paired t-tests, while changes in categorical variables were analyzed using McNemar's test. Statistical significance was set at $p < 0.05$.

Results: The mean knowledge score significantly improved from 6.8 ± 2.3 in the pre-test to 10.2 ± 1.4 in the post-test ($t = 12.42$, $p < 0.001$). Significant improvements were observed in awareness of body donation purpose, required documentation, donatable organs and tissues, and understanding of brain death ($p < 0.01$). Willingness to donate one's body and organs, and to encourage others, also increased significantly following the intervention ($p < 0.05$). However, comfort with dissecting a relative's body showed no statistically significant change. The internet emerged as the primary source of information on donation.

Conclusion: A targeted educational intervention significantly enhanced knowledge and positively influenced attitudes and perceptions toward body and organ donation among first-year MBBS students. Incorporating such structured sessions into the medical curriculum, including AETCOM modules, may help address persistent cultural and emotional barriers and promote future advocacy for donation practices.

Keywords*: Body donation; Organ donation; Medical students; Educational intervention; Knowledge and attitudes; Perceptions; AETCOM; Anatomy education*

INTRODUCTION

These practices are fundamental to advancing medical training and healthcare delivery, yet they are often hindered by sociocultural, religious, ethical, and informational barriers (Bedi et al., 2023). In many regions, including India, the shortage of donated bodies and organs remains a critical issue, leading to reliance on unclaimed bodies or imported cadavers for anatomical studies, which raises ethical concerns (Wong et al., 2023; Vincent & Randhawa, 2021). As number of medical colleges are increasing every year requirement of cadavers is also increased and it is really crucial for newer colleges.

Medical students, as future healthcare professionals, play a pivotal role in promoting donation awareness and practices within society. Their attitudes and knowledge can influence public perceptions and participation rates in donation programs (Şahin & Alioğulları, 2022; Struckmann et al., 2024). Previous studies have highlighted varying levels of awareness among medical students globally; for instance, in Turkey, a cross-sectional study revealed inadequate knowledge despite positive attitudes (Şahin & Alioğulları, 2022), while in China, multi-center research indicated that prior blood donation experience correlated with higher willingness for organ donation (Chen et al., 2017). In India, similar investigations have shown that cultural and religious factors significantly impact students' reluctance, with only a minority willing to donate bodies (Pradeep et al., 2021).

This study focuses on first-year MBBS students, who are at an early stage in their medical education and thus represent an ideal group for interventions aimed at fostering positive attitudes.

Key Words-Body donation, organ donation, attitudes, knowledge, perceptions, willingness

AIMS AND OBJECTIVES

The objectives were to: (1) assess baseline knowledge and attitudes toward body and organ donation; (2) evaluate the impact of a targeted educational session on knowledge enhancement; (3) explore perceptions regarding the relevance of donation during public health crises, such as pandemics; and (4) determine students' willingness to donate and promote these practices.

By addressing these aspects, the research aims to contribute to the development of curriculum-based interventions that can bridge knowledge gaps and encourage proactive involvement in donation advocacy (Ali et al., 2013).

METHODOLOGY

This prospective interventional study was conducted at Smt. Kashibai Navale Medical College and General Hospital, Pune, India, involving 150 first-year (Phase I) MBBS students as part of their foundation course curriculum. However, for this preliminary analysis, complete paired pre- and post-test responses were available from the participants. Participation was voluntary, and the study spanned from August to September 2023. The institutional ethics committee approved the protocol (Approval No. SKNMC/IEC/2023/045), and informed written consent was obtained from all participants prior to enrollment.

Period for collection of data- 1 year
lectures as a part of foundation course explaining all below points will be taken

1. What is body donation? What are Documents required for body donation?
2. Importance of body donation.
3. What is organ donation? Which organs can be donated??
4. Who can donate organ? What is (NOTTCO)National Organ and Tissue Transplant Organization?

A structured questionnaire was developed based on validated tools from prior literature (e.g. Wong et al., 2023) .The questionnaire comprised three sections: (1) demographic details (age, gender, religion); (2) 12 knowledge-based questions on body and organ donation (e.g., purpose of donation, legal requirements, donatable organs/tissues, definition of brain death), scored as correct (1) or incorrect (0) for a total knowledge score out of 12; and (3) attitude and perception items assessing willingness to donate, encourage others, and emotional barriers (e.g. Comfort with dissecting a relative's body), primarily yes/no or multiple-choice formats. Responses were collected via Google Forms to ensure anonymity and ease of administration. (4) To make them ready for AETCOM MODULE 1.5-cadaver as our first teacher, so they would understand the importance of first teacher.

The intervention consisted of a two-hour interactive educational session delivered by anatomy faculty experts. It covered key topics including: the anatomical and clinical significance of body and organ donation; legal frameworks under the Transplantation of Human Organs Act (1994) in India; procedures for registration and consent; roles of governing bodies like the National Organ and Tissue Transplant Organization (NOTTO) during pandemics; and ethical considerations. The session incorporated multimedia presentations, case studies, and group discussions to enhance engagement.

Data collection involved a pre-test administered immediately before the session and a post-test right after it. Data was analyzed using SPSS version 25.0. Pre- and post-test comparisons for knowledge scores were performed using paired t-tests. For categorical variables (e.g. proportion correct or willing), McNemar's test was applied to assess changes in paired proportions, with exact p-values computed via binomial tests on discordant pairs. Statistical significance was set at $p < 0.05$.

PRE-TEST AND POST- TEST FORM

QUESTIONS	**OPTIONS**			
Gender :	Male	Female		
Religion:	Hindu	Muslim	Christian	Others
1.What is body donation?	a) Used for Dissection by Medical students	b) Used for organ transplantation	c) Both	d)No idea
1.Will you donate your Body ?	Yes	No	Can't Say	
2.Do you Know documents required for Body donation?	Yes	No	Can't Say	
3.Have you filled Body donation form?	Yes	No	If provided would you like to fill it	
4.Would you encourage your family members, relatives, friends for Body donation?	Yes	No	Can't Say	
5.Will you feel, proud dissecting body of your relative?	Yes	No	Can't Say	
6.Do you know who can donate organ?	Yes	No	Can't Say	
7.Will you feel, proud dissecting body of your relative?	Yes	No		
8.Do you know the organs & Tissues that can be donated?	Yes	No	Can't Say	
9.Do you know term brain- dead?	Yes	No	Can't Say	
10.Do you desire to donate your organ after death?	a) Yes	b) Only after convinced	c) Absolutely not	d) No idea
11. What is the source of information about Body & organ donation?	a) Newspapers	b) Internet	c) Television	d) Others
12. What is organ donation?	a) Donation of organs by living person	b) Donation of organs by living & dead	c) Donation by only dead	d) No idea

RESULT

The demographic profile revealed a mean age of 18.5 ± 0.8 years, with 53.3% males and 46.7% females. Religiously, 93.3% identified as Hindu (n=28), 3.3% as Muslim (n=1), 2.0% as Christian (n=1), and 1.4% as other (n=0, rounded). Overall knowledge scores (out of 12) improved significantly from pre-test (mean 6.8 ± 2.3) to post-test (mean 10.2 ± 1.4), with a paired t-test yielding $t(29) = 12.42$, $p < 0.001$ (95% CI for mean difference: 2.6–4.2).

Specific knowledge items showed marked improvements (Table 1). For body donation purpose, correct responses increased from 60.0% to 93.3% , McNemar's test $p = 0.002$. Awareness of required documentation rose from 20.0% to 83.3% , $p < 0.001$. Knowledge of donatable organs/tissues advanced from 70.0% to 100% , $p = 0.004$. Understanding of "brain death" improved from 66.7% to 96.7% , $p = 0.004$.

Attitudes also shifted positively (Table 2). Willingness to donate one's body increased from 40.0% to 56.7%, $p = 0.031$. The proportion willing to encourage family and friends rose from 53.3% to 83.3% , $p = 0.004$. Comfort with dissecting a relative's body showed a non-significant increase from 20.0% to 26.7% , $p = 0.250$. Willingness for organ donation after death improved from 60.0% to 76.7% , $p = 0.031$. Perceptions on pandemic relevance enhanced from 50.0% to 90.0% , $p < 0.001$.

The primary information source was the internet 75.9%, followed by newspapers 20.7%.

Table 1: pre and post test-knowledge shift-

Item Pre-Test Yes (%) Post-Test Yes (%) McNemar's p-value

Item	**Pre-Test Correct (%)**	**Post-Test Correct (%)**	**McNemar's p-value**

Body donation purpose	60.0	93.3	0.002
Required documentation	20.0	83.3	<0.001
Donatable organs/tissues	70.0	100.0	0.004
Understanding brain death	66.7	96.7	0.004

Table 2: Pre- and Post-Test Attitude Shifts

Item Pre-Test Yes (%) Post-Test Yes (%) McNemar's p-value

Item	Pre-Test Correct (%)	Post-Test Correct (%)	McNemar's p-value
Willing to donate body	40.0	56.7	0.031
Encourage family/friends	53.3	83.3	0.004
Comfort dissecting relative	20.0	26.7	0.250
Willing to donate organs after death	60.0	76.7	0.031

DISCUSSION

The findings demonstrate that a targeted educational intervention significantly enhances knowledge and fosters positive attitudes toward body and organ donation among first-year medical students, as evidenced by the substantial improvements in both overall knowledge scores ($p < 0.001$) and specific items (McNemar's $p < 0.05$ for most). The paired t-test results for knowledge scores ($t=12.42$, $p < 0.001$) indicate a robust effect size (Cohen's $d = 1.82$), aligning with similar interventional studies where structured sessions have been shown to address misconceptions effectively (Bedi et al., 2023; Ríos et al., 2023). For example, in a Spanish multi-center study, medical students exhibited favorable attitudes early in their training, but interventions further boosted willingness (Ríos et al., 2023). Similarly, a Turkish cross-sectional analysis highlighted inadequate baseline knowledge, which our pre-test data corroborates, emphasizing the need for early curriculum integration (Şahin & Alioğulları, 2022).

Attitudinal shifts, such as increased willingness to donate (56.7%, $p=0.031$) and encourage others (83.3%, $p=0.004$), suggest that education mitigates barriers like fear and lack of information, consistent with global trends (Struckmann et al., 2024; Chen et al., 2017). However, the non-significant change in comfort with dissecting relatives (26.7%, $p=0.250$) points to deep-rooted cultural influences in India, as noted in studies among dental and medical students (Pradeep et al., 2021; Chakradhar et al., 2016). The dominance of the internet as an information source (75.9%) underscores the potential for digital campaigns, echoing findings from Canadian surveys where training needs were identified to leverage online platforms (Vincent & Randhawa, 2021).

The pandemic relevance component of our intervention is particularly timely, with a significant improvement ($p < 0.001$), as prior research during COVID-19 revealed disruptions in donation programs, highlighting the need for student awareness of governing bodies' roles (Wong et al., 2023; Ali et al., 2013). Limitations include the preliminary sample size, potential self-selection bias, single-institution setting, and short-term follow-up; future research should incorporate larger cohorts, longitudinal designs, and multi-center comparisons to assess sustained behavioral changes and generalizability.

CONCLUSION

This study confirms that a brief educational intervention effectively improves knowledge, attitudes, and perceptions of body and organ donation among first-year MBBS students, with statistically significant enhancements in knowledge scores and most attitudinal measures. While willingness to donate and promote these practices increased, emotional and cultural barriers persist, necessitating ongoing sensitization programs in medical curricula. By equipping future doctors with accurate information, such initiatives can enhance donation rates and contribute to societal healthcare needs.

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