VER
Vascular & Endovascular Review

# Empowering Communities through Tailor-Made Education: Enhancing Knowledge and Attitude Toward Organ Donation in Urban Areas – A Mixed-Methods Study

Dr. Megilin Bose[1], R T Girija Rani[2], Dr R Kanakalakshmi[3], Ushakiran Thirunavukarasu[4], U Naga Srilakshmi[5], M Rupa Nalli[6], Haritha Lebaku[7], Golla Velangani[8], Pratima Vuyyuru[9], Rebecca[10]

[1]Professor, Department of Medical–Surgical Nursing, Narayana College of Nursing, Nellore, Andhra Pradesh
[2]Assistant Professor, Dayananda Sagar University, College of Nursing Sciences, Bengaluru, Karnataka
[3]Principal, Usha Martin University, Narayansoso, Jharkhand
[4]HOD, Dept of OBG, Narayana College of Nursing, Nellore, Andhra Pradesh, India
[5]Assistant Professor, Sir C R Reddy College of Nursing, Eluru, Andhra Pradesh
[6]Tutor/Clinical Instructor, Sir C R Reddy College of Nursing, Eluru, Andhra Pradesh
[7]Assistant Professor, Department of OBG, Narayana College of Nursing, Nellore, Andhra Pradesh
[8]Assistant Professor, Department of OBG, Narayana College of Nursing, Nellore, Andhra Pradesh
[9]PhD scholar, Narayana College of Nursing, Nellore, Andhra Pradesh
[10]Clinical Supervisor, Narayana College of Nursing, Nellore, Andhra Pradesh

**Corresponding Author**
Dr. Megilin Bose, Email: megibose@gmail.com

## ABSTRACT

**Background**: Organ donation remains one of the most effective ways to save lives, yet donor shortages persist worldwide. In India, awareness and acceptance of organ donation continue to be limited.

**Objectives**: To examine the effectiveness of a tailor-made educational program on adults' knowledge and attitude toward organ donation in an urban community of Nellore, and to explore participants' experiences and perceptions after the intervention. **Methods**: A mixed-methods design was adopted. Quantitatively, a one-group pre-test–post- test approach was conducted among 100 adults selected through convenience sampling. Qualitatively, feedback and reflections from participants were thematically analyzed. A structured questionnaire measured knowledge (25 items) and attitude (10 items). Following a 30-minute interactive educational session, post-tests were administered.

**Results**: The mean knowledge score improved from 14.35 ± 2.85 to 19.44 ± 1.95, and the mean attitude score rose from 5.10 ± 1.89 to 8.06 ± 1.32. Post-intervention, 65 % of participants exhibited a good attitude toward organ donation. Significant associations were found between knowledge and religion, education, and income ($p < 0.05$). Qualitative data revealed three major themes: awareness transformation, personal reflection on social responsibility, and motivation to act.

**Conclusion**: Tailor-made community education substantially enhanced understanding and positive attitudes toward organ donation. Blending quantitative outcomes with qualitative insights highlights the value of context-specific health education in strengthening community engagement.

**KEYWORDS**: Organ donation, Tailor-made education, Mixed-methods study, Knowledge, Attitude, Community empowerment, Nursing education.

**How to Cite:** Dr. Megilin Bose, R T Girija Rani, Dr R Kanakalakshmi, Ushakiran Thirunavukarasu, U Naga Srilakshmi, M Rupa Nalli, Haritha Lebaku, Golla Velangani, Pratima Vuyyuru, Rebecca, (2025) Empowering Communities through Tailor-Made Education: Enhancing Knowledge and Attitude Toward Organ Donation in Urban Areas – A Mixed-Methods Study, Vascular and Endovascular Review, Vol.8, No.19s, 1-10

## INTRODUCTION

Organ transplantation has transformed modern medicine by offering patients with irreversible organ failure a renewed chance of survival. Globally, the demand for organs continues to exceed supply; nearly one-third of patients on waiting lists die before receiving a transplant [1]. According to the World Health Organization, kidney transplantation is performed in over 90 countries, yet donor rates remain insufficient to meet global needs.

In India, despite remarkable medical progress, the organ donation rate is still below one deceased donor per million population [3]. The year 2024 marked a record 18 ,911 transplants nationwide, but most donations originated from living donors [3]. Cultural taboos, inadequate information, and emotional hesitation within families often hinder the decision to donate [2]. Addressing these barriers requires not just awareness campaigns but culturally and linguistically adapted education that resonates with specific communities.

Educational interventions have proven to be effective tools for promoting positive attitudes toward health behaviors. Almutairi (2020) [1] demonstrated that structured teaching significantly improved participants' willingness to register as organ donors. Likewise, Asimakopoulou (2021) [2] found that individuals with better knowledge about transplantation were more inclined to donate. However, few Indian studies have tested localized, participant- centered approaches designed around community needs. Adults and young professionals act as role models within their families; their awareness can trigger collective social change. In Nellore's urban areas, limited exposure to credible information has contributed to misconceptions about organ retrieval and consent procedures. Therefore, this study was undertaken to empower communities through a tailor-made educational intervention, aiming to improve both cognitive understanding and emotional readiness to support organ donation.

## OBJECTIVES

1. To assess baseline knowledge and attitude of adults regarding organ donation.
2. To determine the effectiveness of tailor-made education in improving knowledge and attitude.
3. To explore participants' perceptions and experiences following the educational program.
4. To identify associations between knowledge, attitude, and selected socio-demographic variables.

## MATERIALS AND METHODS

### Design and Approach

A mixed-methods approach was chosen to capture both measurable outcomes and personal experiences. The quantitative strand used a one-group pre-test–post-test design, and the qualitative strand explored participants' reflections after the intervention.

Setting and Sample

The study was conducted in Saraswathi Nagar, an urban locality of Nellore, Andhra Pradesh. The sample comprised 100 adults aged 22–65 years, selected by non-probability convenience sampling. Inclusion criteria included permanent residency and willingness to participate.

### Tool Description

1. Section A: Socio-demographic profile (age, gender, religion, marital status, education, income, family type).
2. Section B: 25-item knowledge questionnaire scored 0–25.
3. Section C: 10-item attitude checklist scored 0–10.

### Intervention

Participants first completed a pre-test. Then, a 30-minute tailor-made educational session was delivered using posters, discussions, and short videos in the local language. Topics covered the meaning of organ donation, myths and facts, donor registration process, and legal/ethical considerations. A post-test followed immediately. Qualitative reflections were gathered through open-ended questions and brief interviews.

### Data Collection Procedure

Data were collected over six weeks after obtaining ethical approval and informed consent. Each day 5–7 participants were engaged. Confidentiality and voluntary participation were ensured.

### Data Analysis

Quantitative data were analyzed using descriptive statistics (mean, SD, percentage) and inferential tests (Chi-square, paired t-test) at $p < 0.05$. Qualitative responses were analyzed thematically to identify recurring ideas.

## RESULTS

**Table 1. Socio-Demographic Characteristics (n = 100)**

| *Variable* | *Category* | *n (%)* |
|---|---|---|
| ***Age*** | 22–35 yrs | 50 (50) |
| | 36–45 yrs | 38 (38) |
| | 46–65 yrs | 12 (12) |
| ***Gender*** | Male | 22 (22) |
| | Female | 78 (78) |
| ***Religion*** | Hindu | 41 (41) |
| | Muslim | 54 (54) |
| | Christian | 5 (5) |
| ***Education*** | Primary | 59 (59) |
| | Secondary | 21 (21) |
| | Graduate | 14 (14) |
| | Illiterate | 6 (6) |
| ***Monthly Income (₹)*** | < 5 000 | 3 (3) |
| | 5 001–8 000 | 18 (18) |

| | | |
|---|---|---|
| | 8 001–11 000 | 58 (58) |

Half of the respondents were aged 22–35 years and nearly four-fifths were women, indicating that the sample largely represented young and middle-aged female adults. A majority (59 %) had only primary-level education and most earned between ₹8 000–11 000 per month. The religious distribution showed 54 % Muslims, 41 % Hindus, and 5 % Christians, reflecting the multicultural composition of the community.

**Table 2. Distribution of Knowledge Scores Before and After Intervention**

| *Grade* | *Pre-Test n (%)* | *Post-Test n (%)* |
|---|---|---|
| *A+* | 0 (0) | 6 (6) |
| *A* | 0 (0) | 22 (22) |
| *B+* | 12 (12) | 50 (50) |
| *B* | 24 (24) | 22 (22) |
| *C* | 61 (61) | 0 (0) |
| *D* | 3 (3) | 0 (0) |

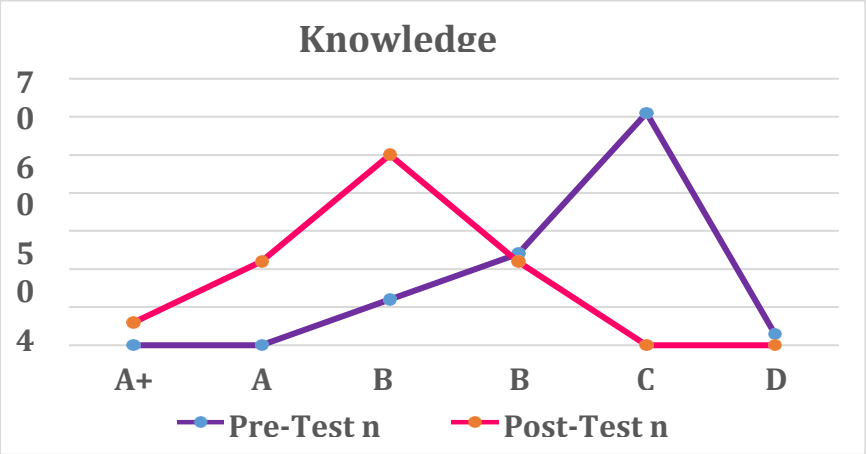


**Figure No 1: Percentage distribution of Knowledge Score**

Participants showed a marked increase in knowledge following the educational session. The mean gain of 5.09 points was statistically significant ($Z = 14.97$, $p < 0.001$), confirming the effectiveness of tailor-made education in improving understanding of organ donation.

**Table 3. Comparison of Attitude Levels**

| *Level* | Pre-Test % | Post-Test % |
|---|---|---|
| *Fair* | 59 | 0 |
| *Average* | 31 | 35 |
| *Good* | 10 | 65 |

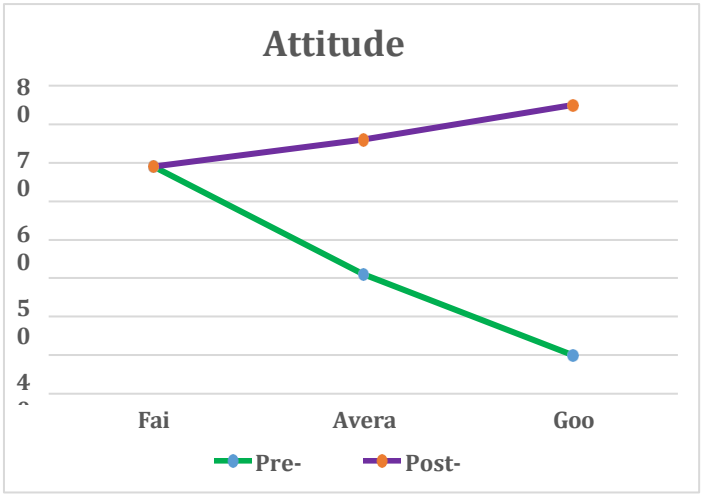


**Figure No-2: Percentage distribution of Attitude Scores**

Before intervention, the majority (59 %) held only a fair attitude toward organ donation. After education, 65 % demonstrated good attitude, and none remained in the "fair" category. The highly significant Z-value (12.87) indicates that the program successfully fostered a more favorable disposition toward organ donation.

**Table 4. Association Between Knowledge and Socio-Demographic Variables**

| Variable | $\chi^2$ | df | p | Significance |
|---|---|---|---|---|
| **Religion** | 14.66 | 6 | < 0.05 | Significant |
| **Education** | 18.66 | 9 | < 0.05 | Significant |
| **Income** | 21.51 | 9 | < 0.05 | Significant |
| **Age, Gender, Marital Status, Family Type** | — | — | > 0.05 | Not Significant |

Knowledge improvement was significantly associated with religion, education, and income, suggesting that socio-cultural and economic background influence learning outcomes. Variables such as age and gender did not show meaningful relationships.

**Table 5. Correlation Between Knowledge and Attitude Scores (n = 100)**

| Variables | r (Pearson's) | p | Interpretation |
|---|---|---|---|
| Knowledge ↔ Attitude (pre-test) | 0.42 | < 0.01 | Moderate positive correlation |
| Knowledge ↔ Attitude (post-test) | 0.63 | < 0.001 | Strong positive correlation |

Before the educational intervention, a moderate positive correlation (r = 0.42) existed between knowledge and attitude, indicating that participants with higher baseline knowledge also tended to have better attitudes. After the program, correlation strength increased to r = 0.63 ($p < 0.001$), demonstrating that improvement in knowledge was accompanied by a proportionate enhancement in attitude toward organ donation. This confirms that cognitive understanding and emotional acceptance are interrelated outcomes of educational interventions.

## DISCUSSION

The present mixed-methods study assessed the effectiveness of a tailor-made educational intervention on the knowledge and attitude of adults regarding organ donation in selected urban areas of Nellore. The findings revealed a significant improvement in both knowledge and attitude following the educational session, confirming that community-centered education can bring meaningful behavioral change.

### 1. Knowledge Enhancement After Tailor-Made Education

Before the intervention, the majority of participants (61%) had only average or below-average knowledge of organ donation. Post-intervention, 78% of adults achieved scores in the A and B+ categories, with the mean knowledge rising from 14.35 ± 2.85 to 19.44 ± 1.95. This finding indicates that tailor-made education significantly improves cognitive understanding of the concept. The use of culturally adapted materials in local language likely helped overcome misconceptions and increased retention.

This result is consistent with the study by Almutairi (2020) [1], who reported a marked improvement in knowledge and willingness toward organ donation among health sciences students after a structured teaching program. Similarly, Asimakopoulou (2021) [2] found that targeted awareness sessions among Cyprus residents improved comprehension of legal and ethical aspects of donation. Both studies highlight that education tailored to the audience's social and cultural context enhances learning effectiveness — a finding echoed in the present research.

Moreover, the increase in knowledge aligns with Bajeli-Datt (2025) [3], who noted that India's organ donation rates remain low primarily due to lack of information and understanding among the general population. The current study thus provides empirical evidence that community- based educational initiatives can help address this gap.

### 2. Improvement in Attitude Toward Organ Donation

In the pre-test, most adults displayed either fair (59%) or average (31%) attitudes toward organ donation, reflecting limited awareness and emotional readiness. After the educational intervention, 65% of participants demonstrated a good attitude, indicating positive transformation. The mean attitude score improved from 5.10 ± 1.89 to 8.06 ± 1.32, demonstrating that educational interventions can influence not only knowledge but also motivation and ethical acceptance.

This positive shift parallels the findings of Asimakopoulou (2021) [2], who observed a rise in favorable attitudes after health education campaigns. In addition, Venkatesan (2019) [5] emphasized that repeated exposure to factual information and discussions fosters empathy and supportive attitudes toward donation decisions.

A study by Marzena Mikla et al. (2023) in Poland similarly concluded that attitude change is influenced by both emotional engagement and perceived social approval. The interactive group discussions used in this study likely created a safe environment for participants to voice doubts and receive clarifications, promoting a genuine attitudinal shift.

### 3. Association Between Knowledge and Socio-Demographic Variables

Statistical analysis revealed significant associations between knowledge levels and participants' religion, education, and monthly income ($p < 0.05$). These results suggest that individuals with higher educational attainment and better economic stability are more likely to comprehend and accept the concept of organ donation.

Comparable findings were reported by Almutairi (2020) [1], who noted that educational status was the most influential factor determining awareness. Similarly, Sulaiman et al. (2020) found that socioeconomic background influenced willingness to participate in donor programs. In contrast, variables such as age and gender showed no significant correlation, implying that awareness initiatives should target all adult groups rather than specific demographics.

Religious affiliation also emerged as a meaningful factor. Participants identifying as Muslims displayed lower initial awareness, consistent with findings from Asimakopoulou (2021) [2], who reported that cultural and religious beliefs sometimes restrict acceptance of posthumous organ removal. However, after the educational session, improved understanding of legal and ethical safeguards mitigated these concerns. This emphasizes that sensitive, nonjudgmental education can bridge cultural misconceptions.

### 4. Qualitative Insights Supporting Quantitative Data

The qualitative component enriched the quantitative findings by revealing participants' personal reflections. Three major themes—awareness transformation, personal responsibility, and motivation to act—highlighted the emotional and ethical impact of the intervention.

Participants described the program as an "eye-opener," acknowledging that organ donation could be a final act of service to humanity. Some reported discussing the topic with family members immediately after the session, indicating the potential ripple effect of education within communities.

These insights resonate with the conclusions of Bond (2010) and Alio et al. (2010) who emphasized that interpersonal dialogue and emotional engagement enhance long-term behavioral change. The mixed-method design of the current study thus provided a holistic understanding of how educational experiences translate into personal conviction.

## CONCLUSION

Empowering communities through tailored educational strategies proved effective in improving both knowledge and attitude toward organ donation. Integrating such participatory models within urban health frameworks can strengthen donor awareness and promote a culture of generosity that transcends individual barriers.

## RECOMMENDATIONS

Based on the findings of the present study, it is recommended that similar tailor-made educational programs be expanded to include rural and multicultural populations to ensure broader community participation and inclusivity. Future research should adopt longitudinal follow-up designs to evaluate the long-term retention of knowledge and sustainability of positive attitudes toward organ donation. In the present digital era, the use of mixed-media platforms, mobile applications, and social networking tools can play a vital role in engaging younger audiences and promoting public awareness on a larger scale. Furthermore, policymakers are encouraged to collaborate closely with nursing professionals in the planning and execution of national organ donation awareness missions, as nurses possess the community trust and communication skills necessary to foster behavioral change and promote ethical acceptance of organ donation across diverse social settings.

## ACKNOWLEDGEMENTS

The author expresses sincere gratitude to all the community members of Saraswathi Nagar, Nellore, who participated in this study for their cooperation and valuable time. Heartfelt thanks are extended to the local health workers and volunteers who assisted in data collection and coordinated the community sessions. The author also acknowledges the encouragement and support of the faculty of Sree Narayana College of Nursing, Nellore, throughout the research process.

**Footnotes**

**Funding:**

This study did not receive any external financial support. The research was carried out with the personal contribution of the author.

**Provenance and peer review:**

Not commissioned; externally peer reviewed.

**Patient and public consent:**

Not applicable.

**Ethics approval:**

Administrative permission was obtained from Sree Narayana College of Nursing, Nellore. Ethical clearance for the study was granted by the Institutional Ethics Committee (Ref. No: SNCN/IEC/2024/OD/12). The research strictly adhered to the principles

of the Declaration of Helsinki on Ethical Principles for Medical Research Involving Human Subjects. Written informed consent was obtained from all participants, who were informed of their right to withdraw from the study at any time without penalty.

**Community involvement:**

Community members were not involved in the design, conduct, or reporting of this research. However, they actively participated in the educational sessions and feedback discussions.

**Data availability:**

Data supporting the findings of this study are available from the corresponding author upon reasonable request.

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Annexure I – Section B: 25-Item Structured Knowledge Questionnaire on Organ Donation
Each correct answer = 1 mark; total = 25 marks.
Choose the most appropriate answer from the four given options.

| No. | Question | Options | Correct Answer |
|---|---|---|---|
| 1 | What does "organ donation" mean? | A. Giving money for health care<br>B. Transferring organs/tissues from one person to another<br>C. Taking medicine regularly<br>D. Hospital blood testing | B |
| 2 | Which organ can a living person donate? | A. Heart<br>B. Kidney<br>C. Brain<br>D. Eye | B |
| 3 | Which organ is **not** donated after death? | A. Cornea<br>B. Heart<br>C. Brain<br>D. Liver | C |
| 4 | At what minimum age can a person legally pledge to donate organs in India? | A. 16<br>B. 18<br>C. 21 D. 25 | B |
| 5 | Which Indian act governs organ donation and transplantation? | A. Biomedical Waste Rules<br>B. Human Organ Transplantation Act<br>C. Consumer Protection Act<br>D. Right to Information Act | B |
| 6 | Who can give consent for organ donation after a person's death? | A. Any neighbor<br>B. Family/next of kin<br>C. Government<br>D. Hospital alone | B |
| 7 | What is meant by *brain death*? | A. Heart stops temporarily<br>B. Loss of brain function with irreversible coma<br>C. Deep sleep<br>D. No response due to anesthesia | B |
| 8 | Which of the following is a **myth** about organ donation? | A. Organs can save lives<br>B. Organ donation disfigures the body<br>C. Donation is legal in India<br>D. Anyone can register | B |
| 9 | Which organ is most commonly transplanted in India? | A. Heart<br>B. Kidney<br>C. Pancreas<br>D. Lung | B |
| 10 | Who can register as an organ donor? | A. Only doctors<br>B. Only men<br>C. Any adult in sound mind<br>D. Only relatives of patients | C |

| | | | |
|---|---|---|---|
| 11 | What is the full form of "NOTTO"? | A. National Organ and Tissue Transplant Organization<br>B. National Oncology Treatment Organization<br>C. New Organ Training Team Office<br>D. None | A |
| 12 | How many lives can one donor potentially save? | A. 1–2<br>B. Up to 8<br>C. 10–12<br>D. Only 4 | B |
| 13 | Which religion forbids organ donation? | A. None of the major religions<br>B. Hinduism<br>C. Christianity | A |
| | | D. Islam | |
| 14 | How long can a kidney remain viable after removal? | A. 1 hour<br>B. 6–12 hours<br>C. 24 hours<br>D. 48 hours | B |
| 15 | Who bears the cost of organ retrieval in government hospitals? | A. Donor family<br>B. Recipient<br>C. Government/NGO<br>D. Nurse | C |
| 16 | Can organ donation be done without family consent? | A. Yes<br>B. No<br>C. Only for research<br>D. Sometimes | B |
| 17 | Which of the following tissues can be donated? | A. Skin<br>B. Bone<br>C. Cornea<br>D. All | D |
| 18 | Is blood group matching necessary for organ transplantation? | A. Yes<br>B. No<br>C. Only for eye donation<br>D. Not sure | A |
| 19 | Which group maintains India's national transplant waiting list? | A. AIIMS<br>B. NOTTO<br>C. Red Cross<br>D. WHO | B |
| 20 | Can living donors lead a normal life after donating one kidney? | A. Yes<br>B. No<br>C. Sometimes<br>D. Never | A |
| 21 | Which statement is true about organ donation? | A. It benefits only the rich<br>B. It saves lives<br>C. It is illegal<br>D. It causes pain to donor | B |
| 22 | What is the first step to become a registered donor? | A. Online or hospital registration<br>B. Blood donation<br>C. Medical insurance<br>D. Informing friends | A |

| | | | |
|---|---|---|---|
| 23 | Which government body promotes organ donation awareness? | A. ICMR<br>B. NOTTO<br>C. AICTE<br>D. WHO | B |
| 24 | What role can nurses play in organ donation? | A. Health educator and counselor<br>B. No role<br>C. Legal advisor<br>D. Technician | A |
| 25 | Would you be willing to donate your organs or pledge as a donor? | A. Yes<br>B. No<br>C. Not sure<br>D. Prefer not to answer | A |

Annexure II – Section C: 10-Item Attitude Checklist on Organ Donation
Each item rated on a 3-point Likert scale: Agree (3), Undecided (2), Disagree (1).
Maximum = 30 points; higher scores = more favorable attitude.

| No. | Statement |
|---|---|
| 1 | Organ donation is a noble act that can save many lives. |
| 2 | I would like to register myself as an organ donor in the future. |
| 3 | Religious or cultural beliefs do not prevent me from donating organs. |
| 4 | Discussing organ donation with my family is important before taking a decision. |
| 5 | Organ donation after death should be promoted through community and media campaigns. |
| 6 | I feel hesitant to talk about organ donation because it involves death. *(reverse-scored)* |
| 7 | I believe donated organs may be misused or sold illegally. *(reverse-scored)* |
| 8 | I would motivate my friends and relatives to become organ donors. |
| 9 | Health professionals, especially nurses, should take the lead in creating public awareness. |
| 10 | If given the opportunity, I am willing to pledge my organs for transplantation. |

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