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Deceased Donor Transplantation in Albania: Integrating Public Opinion with ICU-Based Feasibility

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Abstract

Introduction. Albania currently lacks a deceased donor kidney transplant program, mainly due to the legal, institutional, and cultural barriers. To assess the feasibility of starting such a program, we performed a dual-faceted investigation that integrated clinical observations in intensive care settings with an analysis of public attitudes toward organ donation.

Methods. A prospective observational study was undertaken involving 150 trauma patients admitted to the Intensive Care Unit (ICU) at the University Hospital of Trauma. The primary objective was to evaluate renal viability at the time of death. Concurrently, a nationwide, self-administered online survey was distributed to assess public perceptions, gathering responses from 1,457 adult participants across Albania.

Results. Among the 102 ICU deaths, 35.3% of patients maintained viable kidney function at the time of death. Notably, among those who died within the first 72 hours, 66.7% had transplantable kidneys, highlighting a missed opportunity for a deceased donation in early ICU mortality cases. The survey revealed encouraging public support for deceased organ donation in Albania. Nearly three-quarters (74.8%) believe it's time to establish a national deceased donor program, and 58.6% gave the highest possible score (10/10) when asked about registering as a potential deceased donor to help a family member. Even when it comes to donating to a stranger after death, 72% of respondents expressed moderate to strong willingness, with 36% giving the maximum score - highlighting a remarkable level of altruism.

In a separate question, an overwhelming 90.2% of participants stated they would be willing to donate a kidney to a family member while alive, reflecting strong support for living donation as well. Factors positively associated with willingness to donate included older age and personal familiarity with individuals undergoing dialysis. Significant barriers identified were partial trust in the healthcare system and perceived cultural or religious concerns.

Conclusion. The findings indicate both clinical and societal readiness to establish a deceased donor kidney transplantation program in Albania. Implementation will need a comprehensive legal, ethical, and institutional reforms, alongside targeted public education and strengthening of the healthcare system to promote trust and support informed consent.

Keywords: deceased donor kidney transplantation, feasibility study, trauma-related acute kidney injury, chronic kidney disease

Introduction

Organ transplantation is one of the most effective treatments for patients living with end-stage renal disease (ESRD). While living donor kidney transplantation is currently performed in Albania, a formal system for deceased donor transplantation is still lacking due to the absence of legal frameworks, clear clinical guidelines, and dedicated institutional infrastructure. In contrast, many European countries have well-established deceased donor programs that reduce dialysis dependence and improve long-term patient outcomes. Albania remains one of the few countries in the region without such a system. Understanding how the public views this issue is critical not just from an ethical standpoint, but also to inform practical and culturally sensitive policy planning. The aim of this nationwide survey, believed to be the first of its kind in Albania, was to assess public awareness, attitudes, and willingness toward organ donation in Albania, in order to evaluate societal readiness for establishing a national deceased donor kidney transplantation program. This survey aimed to identify key motivators and barriers impacting donation decisions, including trust in the healthcare system, cultural or religious beliefs, and

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personal experiences with kidney disease, thereby informing future policy, legal frameworks, and educational strategies.

Material and methods

We conducted a two-part investigation. First, 150 trauma patients admitted to the University Hospital Trauma ICU (2023-2024) with a normal baseline renal function were observed for 14 days to assess renal viability at the time of death. AKI was diagnosed and staged according to the Kidney Disease: Improving Global Outcomes (KDIGO) criteria. Inclusion criteria were age ≥18 years and baseline glomerular filtration rate (GFR) >90 mL/min, excluding preexisting chronic kidney disease. Patients with direct renal trauma were excluded.

Second, we conducted a nationwide online survey using Google Forms, which was distributed via WhatsApp over one week, and collected responses from 1,457 adult participants. Our questionnaire was based in part on previously published and validated instruments, including the 61-item survey by Zampieron *et al*. (2010) [1] and the European Commission's Special Eurobarometer [2] on organ donation and transplantation (2009). Selected items from both surveys were culturally adapted and translated to reflect the Albanian context and healthcare system, while maintaining their core thematic structure. The survey was anonymous, voluntary, and did not collect personally identifying data. By local regulations, formal ethics approval was not required.

Results

The ICU-based study of the 150 trauma patients with normal kidney function revealed that 102 (68%) died during their ICU stay. Of these, 36 (35.3%) maintained viable renal function at the time of death. Notably, among patients who died within the first 72 hours, two-thirds (66.7%) still had transplantable kidneys. A younger age was associated with a higher likelihood of maintaining kidney function at the time of death. Among early ICU deaths (within 72 hours), the average age of those with viable kidneys was 49 years±11.2 years, compared to 63.1±15.39 years among later deaths. This difference underlines the donor potential in younger trauma patients who die shortly after admission. Key risk factors for acute kidney injury (AKI) included nephrotoxic drug exposure, hypotension, and metabolic derangements. Despite these risks, early deaths often occurred before significant renal deterioration, identifying a window of donor eligibility that is currently missed due to a lack of policy and protocols. Figure 1, shows a comprehensive view of the ICU Study Data.

The survey data were collected over a one-week period using a self-administered online questionnaire created via Google Forms. The survey link was distributed through WhatsApp to enable a broad and efficient reach among the target population.

A total of 1,457 individuals participated in the survey. The majority of respondents were between 18 and 30 years old (41.3%), followed by those aged 31 to 45 years (37.8%) and 46 to 60 years (17.4%). Participants over the age of 60 accounted for the remaining portion.

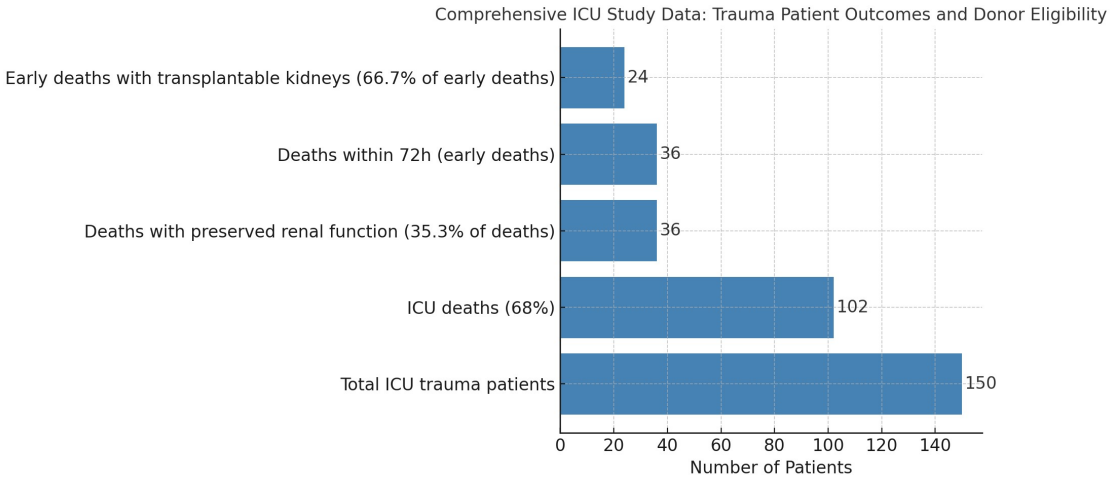

Fig. 1. Comprehensive ICU Study Data: Trauma Patient Outcomes and Donor Eligibility. From a total of 150 trauma patients admitted to the ICU, 68% died during their stay. Among the deceased, 35.3% preserved renal function, and 36 died within 72 hours. Of these early deaths, 66.7% had transplantable kidneys, representing a potential organ donation opportunity.

In terms of a gender distribution, 75.5% of respondents were identified as female, 23.7% as male, and the remaining 0.8% did not disclose their gender. Regarding the place of residence, 81.2% of respondents lived in urban areas, while 18.7% resided in rural areas. Figure 2 presents epidemiological data of participants on the survey.

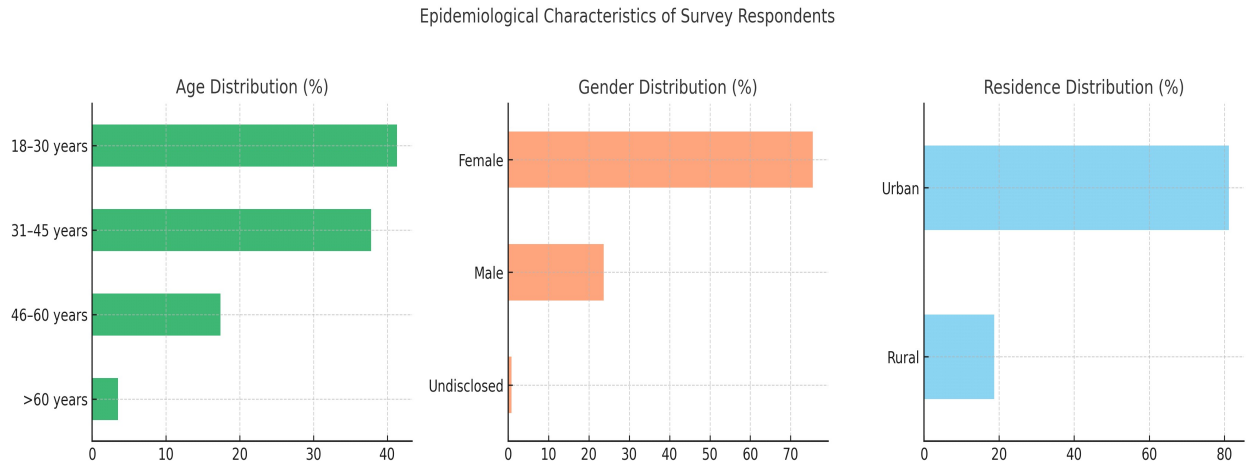

Fig. 2. Visualize the epidemiological characteristics of the survey respondents, including age distribution, gender distribution, and place of residence

The survey revealed several notable trends. In a very high proportion of both urban and rural respondents expressed complete willingness to donate (59.3% and 55.1% selected the highest score (10/10) in urban and rural, respectively). The percentage of respondents who were completely unwilling (score 0) was 6.8% and 8.1% in urban and rural, respectively. Out of 604 respondents who indicated they work in the medical field, 337 (or approximately 55.8%) gave the maximum score of 10/10 when asked about their willingness to join a potential deceased donor registry to help a family member. Among the 851 respondents who do not work in the medical field, 515 (or 60.5%) gave the maximum score of 10/10 when asked about their willingness to join a potential deceased donor registry to help a family member. Around 66.2% of respondents said they would agree to a kidney transplant to come from a brain-dead donor if a family member or friend needed it, but only 54.9% said they would agree to have this transplant performed in Albania. While alive, 90.2% were willing to donate a kidney to a family member. Majority, 74.8% agreed that the time has come for Albania to introduce a deceased donor transplant program. When asked about joining a donor registry if a family member was in need of a transplant, 86.3% rated their willingness between 5 and 10, with 58.6% giving the highest possible score (10/10). In addition, 36% were equally willing to donate to a stranger, highlighting significant altruism. Conversely, 14% completely rejected the idea (score 0), while another 30% were cautiously supportive (scores 5-9), forming a "grey zone" of hesitant but potentially reachable individuals.

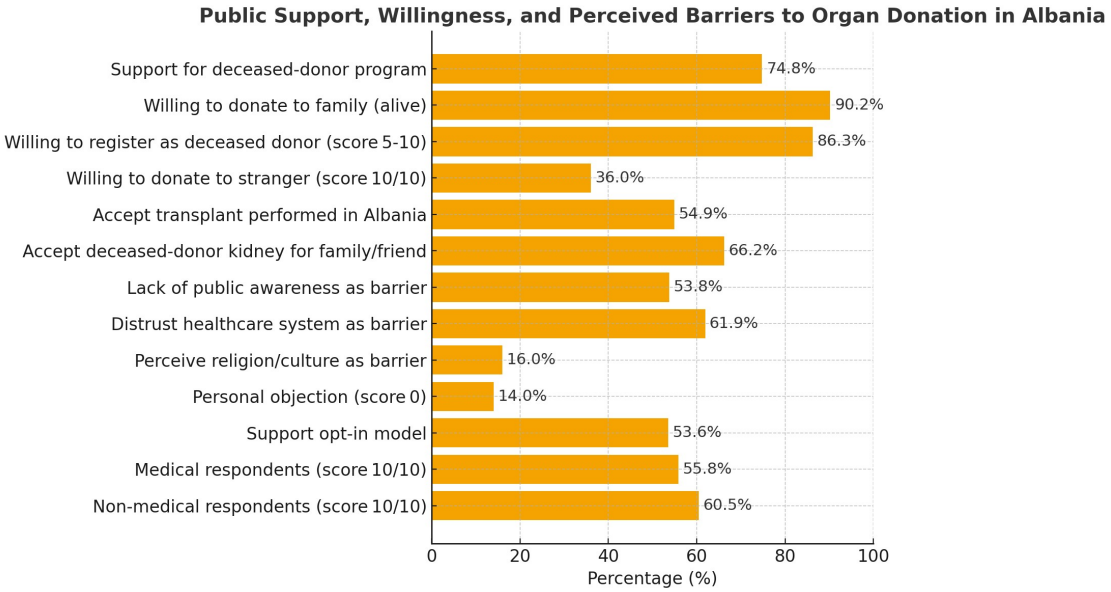

Fig. 3. Public Support, Willingness, and Perceived Barriers to Organ Donation in Albania: Results from a Nationwide Survey (n = 1,457). Data illustrate high willingness to donate to family members, moderate support for deceased donation, and key barriers including perceived religious and cultural objections and partial trust in the healthcare system. Responses reflect both medical and non-medical participants and inform public readiness for a deceased donor program.

Of those who scored 10/10 for donating to a stranger (57.4%), personally, they knew someone on dialysis. This association is supported by a statistically significant, albeit weak, positive correlation ($r=0.10$, $p<0.001$). In a multiple-choice question about perceived barriers to organ donation, 61.9% of respondents cited distrust in the healthcare system, followed by a lack of public awareness (53.8%) and cultural or religious beliefs (16%). Both urban and rural respondents identifieddistrust in the healthcare system as the leading concern, although it was slightly more common in urban areas (62.4% vs. 58.8%). A lack of public awareness was similarly reported in both groups, with rural participants showing a slightly higher percentage (54.8% vs. 53.3%). Rural respondents more frequently cited cultural or religious beliefs than urban ones, although overall, they remained the least cited barrier in both groups (12.9% vs. 9%). One thousand two hundred eighty-four participants (88.1%) reported having an university-level of education, 148 (10.2%) had completed secondary education, and 22 (1.5%) had finished eight-year schooling. Across all three educational levels, partial trust in the Albanian healthcare system is the most frequently reported response. More than a half (53.6%) believed that a person's wishes before death should be the final word in donation decisions an endorsement of an opt-in consent model. Only 25% of respondents fully trusted the healthcare system, with 50% reporting partial trust and 25% expressing none at all. Figure 3 presents Public Support, Willingness, and Perceived Barriers to Organ Donation in Albania.

Discussion

Kidney transplantation remains the preferred treatment for patients with kidney failure who are suitable transplant candidates. It has been shown to significantly reduce both cardiovascular [3] and overall mortality [4,5], while also offering improved quality of life and greater cost-effectiveness in the majority of cases [6]. Even kidneys of lower quality have been shown to offer better outcomes and cost-effectiveness than remaining on dialysis. Prioritizing their use-especially by matching lower-quality kidneys with older recipients-can significantly reduce organ waste and improve transplant efficiency [7]. According to the WHO Global Observatory on Donation and Transplantation, most Western European countries report over 20 deceased donors per million population annually [8,9]. At the same time, Albania remains one of the few without a formal deceased donor program. This regional gap underscores the need for strategic investment and public engagement in transplant policy.

A substantial 58.6% of respondents gave the maximum score (10/10) for registering as a deceased donor to help a relative, indicating strong family-centered motivation. Moreover, 36% expressed an equal willingness to donate to a stranger, suggesting a meaningful degree of altruism beyond kinship. While 14% of participants completely rejected the idea of organ donation, an additional 30% fell within a moderate range of support (scores 5-9), forming a “gray zone” of individuals who are not opposed to donation but may require targeted education, reassurance, or further engagement to shift toward full support.

When compared to the 2009 Eurobarometer data [2], in which 55% of EU citizens expressed willingness to donate their organs after death, Albania’s data shows comparable or even slightly greater support, particularly among the most willing ones. However, while the EU survey also highlighted significant hesitation tied to a distrust into the system and fear of body manipulation, these barriers were echoed in the Albanian context as well-most notably, with nearly 61.9% of Albanian respondents citing distrust in the healthcare system as a significant obstacle.

Doubt in the healthcare system emerged as the most frequently cited concern (61.9%), reflecting a broader skepticism that may hinder participation in deceased donor programs. This aligns with prior European data from Eurobarometer 2009[2], which also identified systemic distrust as one of the main reasons for refusal to donate organs either personally or on behalf of family members.

When stratified by residence, both urban and rural populations cited distrust as their top concern, though it was slightly more prevalent among urban respondents (62.4%) compared to rural (58.8%). This finding may suggest that an increased interaction with the health system in urban areas leads to a greater scrutiny and perceived risks, rather than a greater reassurance.

Lack of public awareness was the second most common barrier overall (53.8%), with a marginally higher ratio in rural participants (54.8%) compared to the urban residents (53.3%). This difference, although modest, reflects the well-documented challenge of accessing information and healthcare education in non-urban settings. Similar patterns have been noted in EU countries where public education campaigns have been unevenly allocated, particularly in Eastern Europe.

Cultural and religious beliefs, although the least cited obstacle in Albania (16%), were mentioned more frequently by rural respondents (12.9%) than by their urban counterparts (9%). These figures are notably lower than in other regional contexts. For instance, in Romania, 17% of respondents in the 2010 Eurobarometer explicitly cited religious reasons as a barrier. In Greece, fear and guilt correlated to the concept of organ removal were reported by over 55% of respondents, suggesting underlying religious or cultural discomfort [10].

All together, these findings underline the importance of targeted public health strategies. To build trust and

improve donation rates, campaigns should address misinformation, promote transparency in the healthcare system, and clarify the compatibility of organ donation with cultural and religious values, particularly in rural areas where such concerns are more noticeable.

There is only a slight difference in willingness to donate a kidney to a family member between urban and rural populations. Both groups demonstrate strong support for organ donation in brain death situations, with 59.3% of urban and 55.1% of rural respondents giving the highest score (10 out of 10). This difference was not statistically significant (χ^2=1.43, p=0.231). Similarly, the percentage of those completely unwilling to donate (score 0) is also close to 6.8% in urban areas and 8.1% in rural areas, without statistical difference (p=0.556). Overall, the level of commitment appears comparable across both groups, with only minor, non-significant variations.

When stratified by age and gender, willingness to donate organs revealed meaningful trends. Older individuals, especially those over 60, had the highest average willingness scores, suggesting that life experience and medical exposure may play a role in shaping altruistic attitudes. Men reported a slightly higher willingness to donate compared to women, while a professional background appeared to have a minimal overall influence. These findings underline the importance of tailoring public awareness campaigns not only demographically but also around shared human values and lived experiences.

Although individuals working in the medical field made up a substantial portion of the surveyed population (approximately 42%), their professional background did not appear to influence their decision significantly, as 55.8% gave the maximum score of 10/10 when asked about joining a potential deceased donor registry to help a family member, compared to 60.5% among non-medical respondents. This finding suggests that altruistic readiness for family-directed donation is widely shared across various professional groups, emphasizing strong societal support that grows beyond medical circles.

When considered together with our ICU-based study, where a significant number of patients maintained transplantable kidney function at the time of death, it becomes clear that both clinical opportunity and public readiness exist in parallel.

These findings paint a promising picture of a population that is mainly open to the idea of deceased donor transplantation. Many Albanians have adopted a thoughtful and compassionate stance on organ donation, especially when it involves helping a family member. However, even among those willing to donate to strangers, personal exposure, such as knowing someone on dialysis, seemed to play a motivating role.

An opt-in model appears to resonate strongly with the public, particularly because it respects individual autonomy and can help families avoid the emotional burden of making difficult decisions during moments of crisis. However, translating public support into policy and practice will require thoughtful, systematic reforms. The "grey zone" population, comprising those who are neither firmly opposed nor certain, represents an important target for education and outreach campaigns.

The alignment between public perception and ICU-based feasibility presents a unique opportunity for Albania to initiate a deceased donor kidney transplant program. Clinical evidence shows that many patients die with preserved organ function, particularly within the first days of ICU admission, highlighting a clear donor potential. The survey confirms public readiness and ethical alignment with an opt-in model, wherein individuals' choices are respected and families are spared from making difficult decisions under emotional duress.

Several limitations of the survey must also be acknowledged. The survey did not specifically target individuals with direct ICU experience or the next of kin of critically ill patients, which may limit insight into the perspectives most relevant during end-of-life decision-making. While respondents expressed high theoretical willingness to donate, these findings may not fully translate into consent behavior during real clinical scenarios.

Policy and Clinical Recommendations

Healthcare System Trust: Build a transparent and ethically grounded transplant infrastructure to foster public confidence. This includes regular audits, patient satisfaction monitoring, and public reporting mechanisms.

Definition of a Brain Death: Establish a clear, legal, and universally accepted definition of brain death, applicable across all ICUs. This clarity will support ethical decision-making by reanimators and anesthesiologists.

Legal Reform: Pass legislation that allows the withdrawal of life support in confirmed brain death cases, regardless of whether the patient is a potential donor. This is crucial for both ethical clarity and responsible management of ICU resources.

Workforce Training: Develop multidisciplinary transplant teams that include: ICU physicians trained in early donor identification, transplant surgeons and logistical coordinators, nurses, psychologists, or trained communicators skilled in guiding families through end-of-life donation conversations.

Public education: Broaden and intensify outreach to the “grey-zone” segment. Initiatives should be evidence-based, culturally sensitive, and incorporated into both formal curricula and community-level health programs.

Conclusion

Albania is well-positioned to move forward with a deceased donor transplantation program. Public support is strong, and clinical feasibility exists. What is needed now is a coordinated national effort grounded in legislation, supported by healthcare infrastructure, and shaped by respectful, informed dialogue. By adopting a culturally sensitive and patient-centered approach, Albania can build a sustainable program of self-sufficiency that saves lives while honoring individual and societal values.

Conflict of interest statement. None declared.

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