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Original research

Understanding the dynamics of deceased organ donation and utilization in Colombia

William Cruz Mususú[1], Andrea García-Lopez[2], Nicolás Lozano-Suarez[2], Andrea Gómez-Montero[2], Milena Orellano-Salas[1], Luisa Vargas-Pérez[1], Ximena Escobar-Chaves[1], and Fernando Girón-Luque[2]

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ABSTRACT

Objective. To obtain a comprehensive overview of organ donation, organ utilization, and discard in the entire donation process in Colombia.

Methods. A retrospective study of 1 451 possible donors, distributed in three regions of Colombia, evaluated in 2022. The general characteristics, diagnosis, and causes of contraindication for potential donors were described.

Results. Among the 1 451 possible donors, 441 (30.4%) fulfilled brain death criteria, constituting the potential donor pool. Families consented to organ donation in 141 medically suitable cases, while 60 instances utilized legal presumption, leading to 201 eligible donors (13.9%). Of those, 160 (11.0%) were actual donors (in whom operative incision was made with the intent of organ recovery or who had at least one organ recovered). Finally, we identified 147 utilized donors (10.1%) (from whom at least one organ was transplanted). Statistically significant differences were found between age, sex, diagnosis of brain death, and donor critical pathway between regions. A total of 411 organs were transplanted from 147 utilized donors, with kidneys being the most frequently procured and transplanted organs, accounting for 280 (68.1%) of the total. This was followed by 85 livers (20.7%), 31 hearts (7.5%), 14 lungs (3.4%), and 1 pancreas (0.2%). The discard rate of procured deceased donors was 8.1%.

Conclusions. About one-tenth of donors are effectively used for transplantation purposes. Our findings highlight areas of success and challenges, providing a basis for future improvements in Colombia.

Keywords Tissue and organ procurement; organ transplantation; transplant donor site; transplants; tissue donors; Colombia.

Organ transplantation is the best therapy for terminal and irreversible organ failure (1). Solid organ transplants improve life expectancy and quality of life and have a major beneficial impact on public health and the socioeconomic burden of organ failure (2, 3). However, shortage of organs remains an important obstacle. As a result, the disparity between the number of organ donors and patients awaiting transplantation continues to expand (4). Given the paucity of deceased donor organs, it is essential to optimize organ utilization practices (5, 6).

Organ donation in Colombia began in 1965, and in 1979 the legislation regarding brain death donation and organ transplantation was issued. The legislation was changed to presumed consent in 2016. Transplant activity in Colombia is mainly based on deceased donations (7). Yet, like many countries worldwide, Colombia faces significant challenges and opportunities in the realm of organ utilization. Previous reports have shown that only approximately 10% of possible organ donors and 70% of actual donors have been allocated for transplantation purposes (8).

[1] Fundonar Colombia, Bogotá, Colombia

[2] Colombiana de Trasplantes, Bogotá, Colombia ✉ Andrea García López, aegarcia@colombianadetrasplantes.com

In addition, there has been an overall decline in organ donation over the past decade (8). The multifactorial nature of this includes the aging population, better neurocritical protocols, as well as a larger proportion of noncommunicable chronic diseases in younger population like diabetes and hypertension (9, 10). These factors, among others, have gradually increased the complexity of decisions made when offering organs from deceased donors. Furthermore, information on the general characteristics of the population of donors, the reasons for exclusion, and the distribution of donors obtained from each source is scarce (11).

To contextualize, Region 1, based in Bogotá, encompasses the administrative divisions of Cundinamarca, Tolima, Boyacá, Casanare, Meta, Caquetá, Vichada, Vaupés, Guaviare, Guainía, Putumayo, and Amazonas. Region 2, headquartered in Medellín, comprises the territorial entities of Antioquia, San Andrés and Providencia, Chocó, Córdoba, and Caldas. Region 5, with its administrative center in Barranquilla, includes Atlántico, Bolívar, Magdalena, La Guajira, and Sucre (12).

The Technical Bulletin on Formal Education (EDUC) for 2022 reports that Region 1 is the one with the highest level of enrolled students, followed by Region 5 and then Region 2 (13). Data published on TerriData by the National Planning Department show that the highest proportion of females is in Region 2 (51.4%), followed by Region 1 (50.9%) and Region 5 (50.6%). With regard to age groups, there is a higher concentration of children and youth aged 5–19 in Region 5 than Region 1 and Region 2, which had a higher concentration of their population aged 20–34. Region 5 had the highest urban population at 75.5%, followed by Region 2 (72.3%) and Region 1, at 69.1% (14).

In the context of previously published literature, a National Institute of Health report for the year 2020 documented a total of 220 real donors, encompassing tissue donors, equating to a donation rate of 4.4 per million population (pmp) for that year. The year 2021 saw a notable increase compared to the 2020 rate, reaching a total of 268 real donors, resulting in a donation rate of 5.2 pmp based on the projected total population. Furthermore, the preeminence of real donors was observed in Region 1 (35.1%), followed by Region 2 (28.7%), surpassing other regions. An examination of real donors in 2021 relative to the preceding year revealed an overall surge in donation activity across most regions (Regions 1, 2, 3, and 6). Conversely, Region 4 and Region 5 experienced a decline in donation activity compared to the previous year (8).

Furthermore, some characteristics of the Colombian population must be taken into account. For instance, in our country, the legal presumption system was established through Law 1805 of 2016 (15). Nevertheless, there is consensus among transplant groups regarding the crucial role of obtaining family agreement to successfully carry out the organ procurement procedure. This consensus is grounded in the principle that the organ donation process should not cause physical or emotional harm to the individuals involved (16, 17).

On the other hand, some studies on knowledge about donation and transplantation reveal a gap both in the general population and healthcare personnel. In fact, the majority of respondents had not received information about the process (95.3%) and had a limited understanding of legislation related to the topic (52.4%) (18, 19). All of the above demonstrates one of the most significant limitations in the country regarding organ donation and transplantation: there is a lack of awareness about the law, its implementation, and its application to cases of brain death. This is evident both in the general population and among healthcare personnel responsible for patient care. Thus, it underscores the need for policies that prioritize addressing this issue in our country.

Hence, it is crucial to assess and measure organ donation and utilization to gain a precise understanding of why organs are not being transplanted. This assessment enables us to identify specific reasons and implement practical solutions to enhance organ utilization. In this study, we aimed to obtain a comprehensive overview of organ donation, organ utilization, and discard in the entire donation process in Colombia.

MATERIALS AND METHODS

Study design

This was a retrospective analysis of clinical data of all possible organ donors evaluated between 1 January and 31 December 2022 by Fundación Donar Colombia operational coordinators. Information on possible organ donors includes data from three (Region 1, Region 2, Region 5) of the six Colombian regions responsible for organ procurement and transplantation. The analysis included an assessment of demographic characteristics, reported causes of death, contraindications during donation, the critical pathway, and the success of organ recovery for transplantation.

Organ procurement in Colombia

Allocation of organs in Colombia takes place via the National Organ and Tissue Donation Network, which is structured around six distinct regional entities, each responsible for supervising organ procurement and coordination within their respective geographical areas. In 2021, in Region 1 there were 21.8 donors pmp and a population of 16 474 306; in Region 2, 24.2 donors pmp and 10 267 871 population; and in Region 5, 4.4 donors pmp and 8 383 525 population. These three regions together contribute approximately 70% of the donation activity in the country (8).

Collection techniques

A retrospective review was conducted on data recorded in Fundonar's databases pertaining to 1 451 possible organ donor alerts reported to the National Organ and Tissue Donation Network across Regions 1, 2, and 5. These alerts were evaluated by the operational transplant coordinating physicians in 2022. The alert notification process begins with the active and passive detection of possible cases to the health institutions and government entities in charge in each region. Afterwards, a diagnostic evaluation is carried out by the team at each clinic and an assigned external coordinator. Then, the donor is kept in optimal conditions before the procedure. Finally, the surgery teams are responsible for rescuing and properly packaging the organs and tissues (20).

Selection criteria

Variables such as age are taken into account for the selection of donors, although there is no standardized limit for

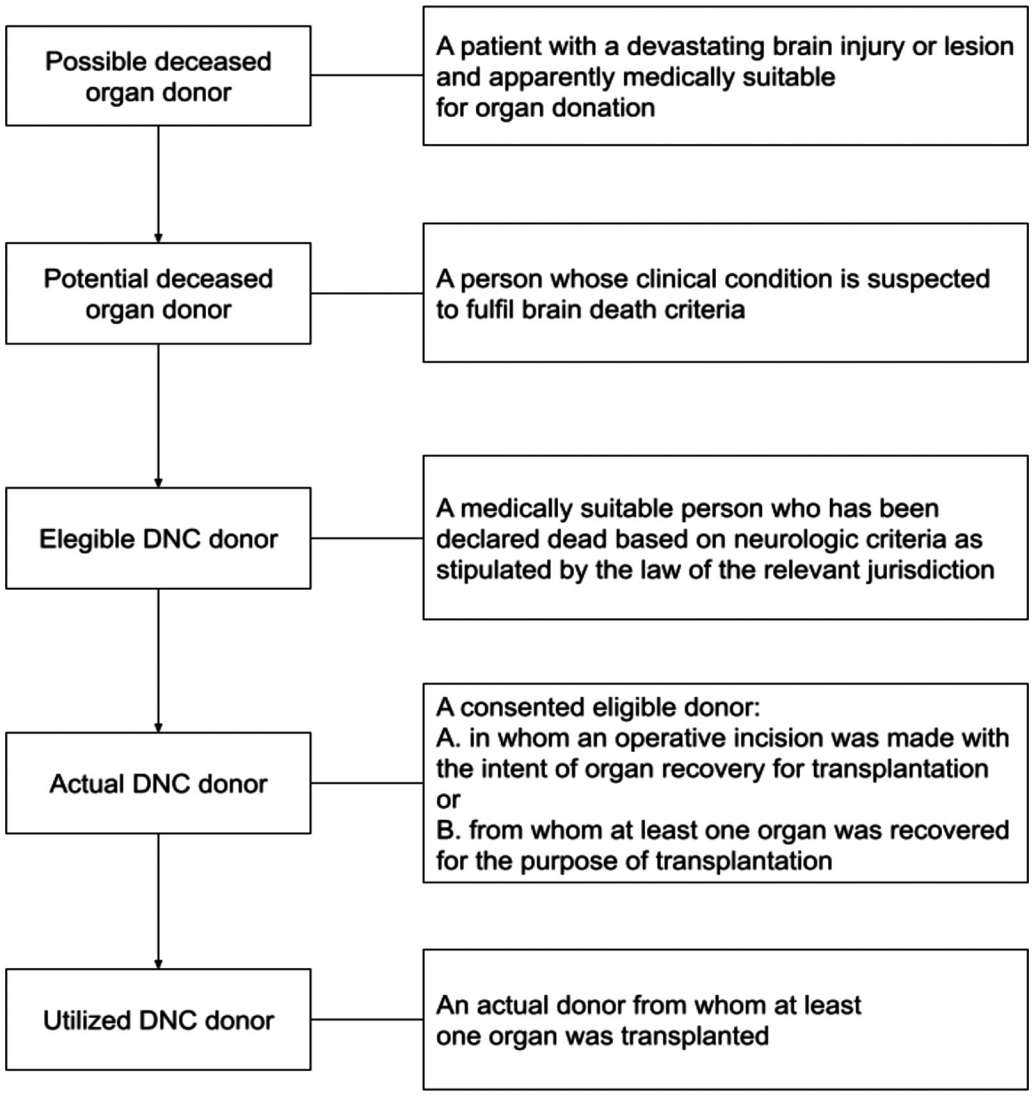
age in Colombia. The cause of death must be clear and established, and the time since death should be less than 15 hours. In addition, associated pathologies are evaluated, such as medical history and acute clinical conditions, as well as any administration of blood products as a trigger for the immune response. Similarly, a history of behavioral risk – for example, consumption, or exposure to sexually transmitted diseases – is considered (20).

Description of the critical pathway of deceased donation

The sequence of stages that facilitate the journey from a deceased individual to a successful transplant has been defined by the World Health Organization (WHO) as the Critical Pathway for Deceased Donation (21). This pathway or protocol intends to establish a tool for assessing the donors, identify critical points for improvement, and reduce the loss of donors/organs. The pathway starts encompassing patients with a high risk of death, then rules out persons unsuitable for donation.

The critical pathway spans from *possible donor* alerts to *utilized donors*. Alerts are triggered by patients with a Glasgow score of ≤5. *Potential donors* have severe brain injuries and are deemed medically viable for organ donation. They include suspected brain-dead patients, whereas *eligible donors* are officially declared brain-dead. *Actual donors* undergo surgery to salvage organs or retrieve them for transplantation. *Utilized donors* are *actual donors* whose organs have been successfully transplanted. Figure 1 summarizes the definitions described by WHO along with an outline of the process by which a donor transitions to the subsequent step within the critical pathway of donation. *Discard* is defined as the situation in which an organ is procured but not transplanted to a suitable recipient.

FIGURE 1. Critical pathway for deceased donation



DNC: dead by neurological criteria.
Source: Adapted from: European Directorate for the Quality of Medicines & HealthCare. Guide to the quality and safety of organs for transplantation. Strasbourg: EDQM; 2019.

Statistical analysis

A descriptive analysis of the variables was performed, presenting categorical variables as absolute and relative frequencies. Quantitative variables underwent the Kolmogorov–Smirnov normality test. Depending on the distribution, they were presented with measures of central tendency (mean or median) and dispersion (standard deviation or interquartile range). Comparisons between Regions were conducted using the Chi-squared test for categorical variables and the Mann–Whitney test for quantitative variables. All analyses were conducted using R Studio version 4.2.2.

Ethical considerations

This study followed national and international ethical guidelines, gaining approval from the Dexa Diab Research Ethics Committee. Given its low-risk nature, informed consent was waived. Rigorous measures were in place to ensure the confidentiality and anonymity of potential donor data, preventing any identification of individuals. This ethical framework underscores the study's commitment to upholding research integrity and subject protection through the Declaration of Helsinki (22), and the Colombian Resolution 8430 of 1993 (23). Also, Colombia adheres to the Declaration of Istanbul, regarding organ trafficking and transplant tourism, and proposes strategies to combat the exploitation of vulnerable populations and the dangers of unregulated organ transplantation (24).

RESULTS

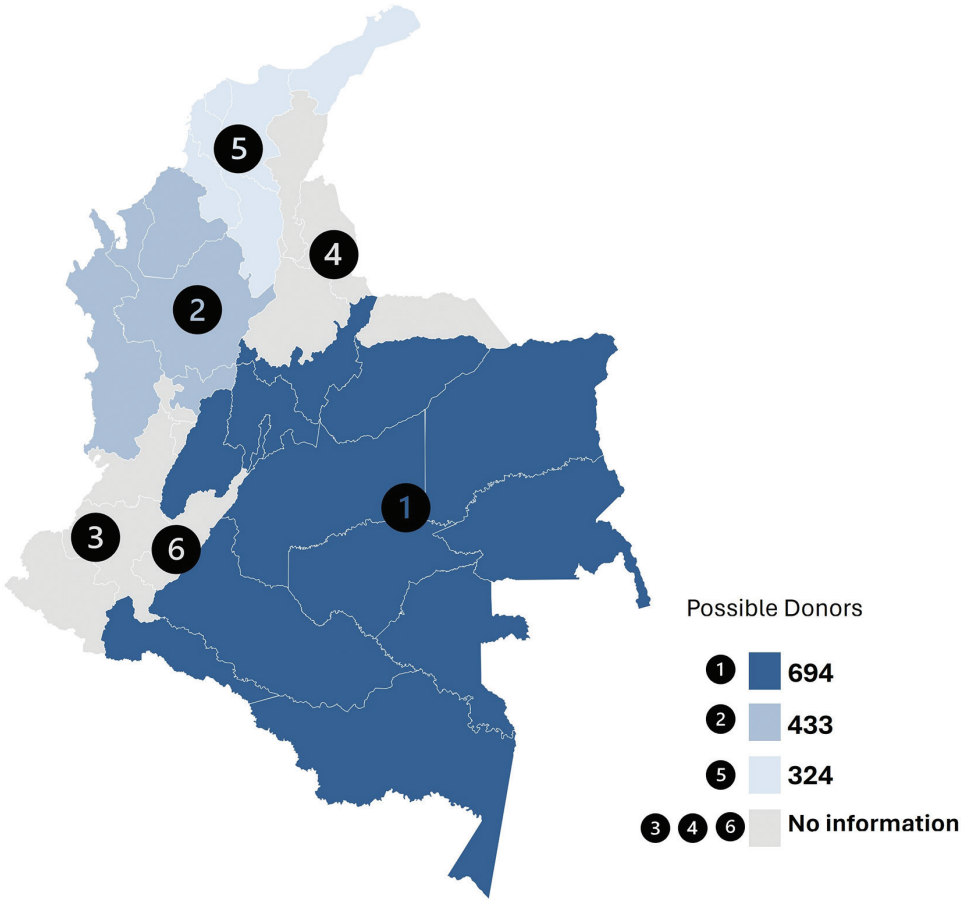
Characteristics of possible donors

In 2022, 1 451 possible donors were identified across 24 cities in three regions of Colombia. Figure 2 shows the number of possible donors by region. Among possible donors, 62.0% were male, and the mean age was 46.4 years (SD 19.3) (Table 1). The leading diagnoses among donors were hemorrhagic stroke, constituting 41.3% of the total, followed by traumatic brain injury at 31.1% and ischemic stroke at 9.5%. The distribution of possible donors was 694 (47.8%) in Region 1, 433 (29.8%) in Region 2, and 324 (22.3%) in Region 5.

The critical pathway

Among the 1 451 possible donors, 441 (30.4%) fulfilled brain death criteria, constituting the potential donor pool.

FIGURE 2. Possible donors in three regions of Colombia, 2022



Source: Figure prepared by the authors.

Families consented to organ donation in 141 medically suitable cases, while 60 instances utilized legal presumption, leading to 201 eligible donors (13.9%). Of those, 160 (11%) were actual donors (in whom operative incision was made with the intent of organ recovery or who had at least one organ recovered). Finally, we identified 147 utilized donors (10.1%) (from whom at least one organ was transplanted). Figure 3 depicts the progression of donors along the critical donation pathway, incorporating the percentage of donors advancing relative to the total donors assessed at the onset of the pathway.

Contraindications for organ donation

Out of 1 451 possible donors, 1 010 were excluded. Of those, 224 were excluded due to neurological improvement or stationary condition, 606 for medical or legal reasons before being declared Dead by Neurological Criteria (DNC), and 180 were classified as circulatory death cases, with no possibility of organ donation. Among the potential donors, 118 were excluded for medical or legal reasons, 119 lacked legal authorization due to family non-consent or absence of presumed consent procedures, and 3 were excluded for logistical reasons. Among the eligible donors, 41 were excluded for medical or legal reasons after the family consented to organ donation. Finally, among actual donors, 5 donors experienced cardiac arrest, and the remaining 8 organs were declined due to organ quality.

Comparison by region

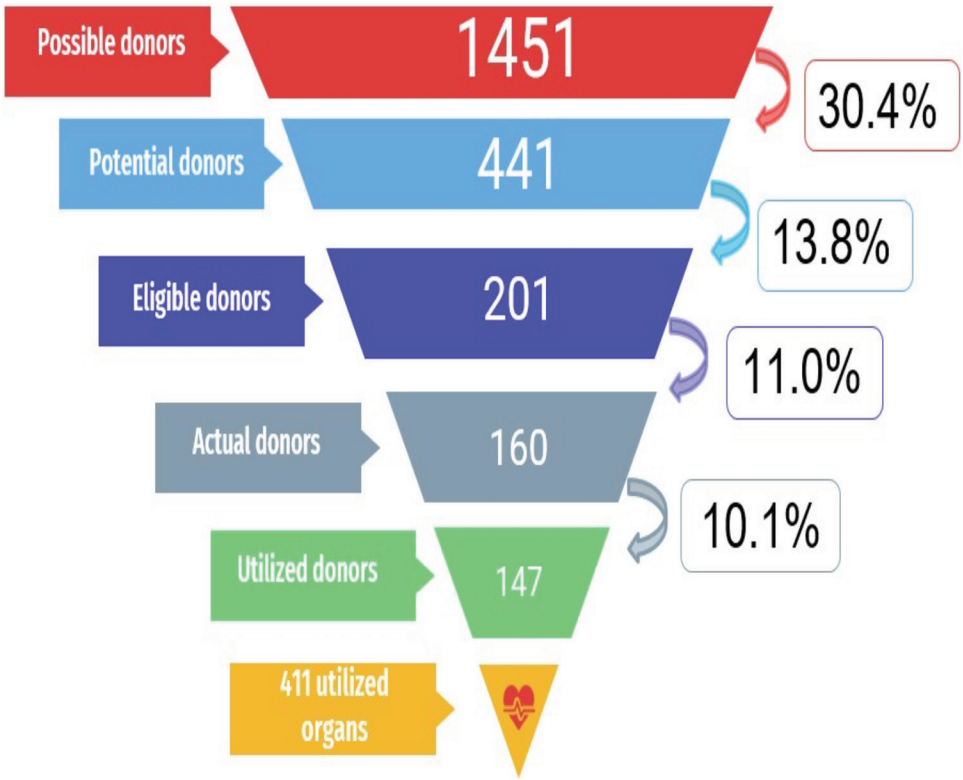
In Region 1, the possible donors demographics indicated a higher mean age of 48.1 years, followed by Region 5 at 45.1 years and Region 2 at 44.3 years (Table 1). Regarding gender distribution, Region 2 showed a notable predominance of male donors, accounting for 69.5% of the total, compared with 61.4% in Region 5 and 57.4% in Region 1.

The prevalence of brain death diagnoses varied significantly among the different regions (Table 1). Region 1 had the highest prevalence, mainly attributed to hemorrhagic stroke, accounting for a notable 45.9%, followed by traumatic cerebral events (TCE) at 25.5% and ischemic stroke at 11.3%. In contrast, Region 2 had higher incidence of TCE, at 44.5%, followed by hemorrhagic stroke at 32.3% and ischemic stroke at 6.4%. In Region 5, hemorrhagic stroke emerged as the predominant diagnosis (43.2%), followed by TCE at 25.0% and hypoxia at 12.6%. All the results were statistically significant.

Organ utilization

A total of 411 organs were transplanted from 147 utilized donors, with kidneys being the most frequently procured and transplanted organs, accounting for 280 (68.1%) of the total (Table 2). This was followed by 85 livers (20.7%), 31 hearts (7.5%), 14 lungs (3.4%), and 1 pancreas (0.2%). The discard rate of procured deceased donors was 8.1%. The distribution of transplanted organs by region is shown in Table 2.

FIGURE 3. Critical pathway within a cohort of kidney transplant deceased donors in three regions of Colombia, 2022



Source: Figure prepared by the authors.

TABLE 1. Characteristics of deceased organ donors, by region, Colombia, 2022

Region	Total *N* = 1 451	Region 1 *n* = 694	Region 2 *n* = 433	Region 5 *n* = 324	*p*-value
Average age (SD)	46.4 (19.3)	48.1 (18.9)	44.3 (18.8)	45.1 (20.2)	0.001*
Male gender *n* (%)	899 (62.0)	399 (57.4)	301 (69.5)	199 (61.4)	0.000*
Diagnosis of brain death *n* (%)					0.000*
Hemorrhagic stroke	599 (41.3)	319 (45.9)	140 (32.3)	140 (43.2)	
Ischemic stroke	138 (9.5)	79 (11.3)	28 (6.4)	31 (9.6)	
Unknown	14 (1.0)	4 (0.5)	2 (0.4)	8 (2.4)	
Hypoxia	128 (8.8)	60 (8.6)	27 (6.2)	41 (12.6)	
Metabolic	8 (0.6)	8 (1.1)	--	--	
Neurological infection	31 (2.1)	17 (2.4)	13 (3.0)	1 (0.3)	
Other	11 (0.8)	--	10 (2.3)	1 (0.3)	
Traumatic brain injury	451 (31.1)	177 (25.5)	193 (44.5)	81 (25.0)	
Brain tumor	71 (4.9)	30 (4.3)	20 (4.6)	21 (6.4)	
Donor critical pathway					0.000*
Possible	1 451 (100)	694 (100)	433 (100)	324 (100)	
Potential	441 (30.4)	245 (35.3)	128 (29.6)	68 (30.0)	
Eligible	201 (13.9)	126 (18.1)	66 (15.2)	9 (2.8)	
Actual	160 (11.0)	102 (14.7)	52 (12.0)	6 (1.8)	
Utilized	147 (10.1)	98 (14.1)	44 (10.2)	5 (1.5)	

Notes: SD, standard deviation; *Result statistically significant with a *p*-value < 0.05.
Source: Table prepared by the authors.

TABLE 2. Distribution of transplanted organs by region, Colombia, 2022

Organ	Total *N* = 411	Region 1 *n* = 260	Region 2 *n* = 140	Region 5 *n* = 11
Kidney	280 (68.1%)	186 (71.5%)	84 (60.0%)	10 (90.9%)
Liver	85 (20.7%)	54 (20.7%)	30 (21.4%)	1 (9.1%)
Heart	31 (7.5%)	8 (3.1%)	6 (4.3%)	0 (0)
Lung	14 (3.4%)	12 (4.6%)	19 (13.5%)	0 (0)
Pancreas	1 (0.2%)	0 (0)	1 (0.7%)	0 (0)

Source: Table prepared by the authors.

Subgroup analyses in organ donation and utilization

Subgroup analyses were undertaken to scrutinize disparities in organ donation and utilization predicated on demographic variables, including region, age, gender, cause of death, and the setting of the alert. Notably, statistically significant distinctions emerged concerning region, age, and the diagnosis of brain death. Conversely, inconclusive findings were observed in relation to gender and the contextual setting of the alert initiation.

DISCUSSION

This study investigates the dynamics of organ donation and utilization in three regions of Colombia during 2022. Organ transplantation can significantly improve the quality of life and life expectancy for patients suffering from terminal organ failure. However, the shortage of available organs remains a significant challenge, and this study aims to better understand the critical pathway and factors affecting organ donation and utilization in Colombia.

One of the key findings of this study is that only around 10% of the possible organ donors were utilized for transplantation. Several factors contributed to the low donation rate in Colombia, including demographic characteristics, causes of death, medical contraindications, instances where the donor's family withdrew consent, logistical issues, and concerns regarding organ quality. Notably, a significant proportion of possible donors were excluded due to medical contraindications or their failure to meet brain death criteria (25). In addition, a notable number of potential donors had consent withdrawn by their families. Despite the presumed consent system in place in Colombia, there is a consensus among transplant groups regarding the critical importance of securing the family's agreement for the successful execution of the organ retrieval procedure. This consensus is founded on the principle that the organ donation process should not pose physical or emotional harm to the individuals involved (16, 17).

In this study, the discard rate was around 8%, and 61% of those were due to organ quality. Discard rates vary between countries, but there is little information on discard rates outside Europe and the United States of America, which have reported discard rates of kidneys to be between 12% and 20% (11, 26, 27). Stewart et al. (27) showed that nearly one-fifth of kidneys recovered with intent to transplant are not used, with some of these discarded due to medical contraindications. Still, a substantial number of kidneys with similar characteristics are discarded, probably due to risk aversion manifested in transplant programs or inefficiencies in the allocation system (27).

Approximately 50% of the donors' causes of death were attributed to hemorrhagic and ischemic strokes. In contrast, a study conducted in the United States reported that trauma (including non-head, head, and penetrating injuries) was the primary diagnosis among donors, accounting for nearly 90% of all causes of death. These divergent causes of death have implications for the suitability of organs for transplantation and should be considered when evaluating potential donors.

A study conducted in Iran in 2018 reported a real donor rate of 96.61% over a 14-year retrospective follow-up (28). In the current study, the estimated percentage of actual donors was 11%. Consequently, a lower donation rate is observed in the Colombian context. In contrast, a 2017 study in Argentina demonstrated that 60% of the total potential donors eventually became utilized donors (29). When comparing this result with the utilized donor rate in our study (10.1%), the significance of persisting in strategies to promote donation in our country is underscored (30). Furthermore, a study at a transplant center in Colombia between 2007 and 2016 determined a utilized donor rate of 27.3%, which is higher compared to the current study (31). In conclusion, a lower rate of utilized donors was identified when compared to global, regional, and local studies (28, 29, 31).

Consistent with existing literature, our results reveal disparities in the distribution of donors based on their region of origin (32, 33). This issue represents a significant constraint for organ donation, particularly since some contraindications are

relative, subject to the experience and guidelines of the transplant groups, as well as the prevailing regulations governing the use of donors with conditions such as active infections or neoplasms (34). Karan et al. (35) have described a model that assesses the economic benefits of utilizing organs from donors with an increased risk of blood-borne virus transmission, such as hepatitis B or C virus, thereby expanding the donor pool and utilization. This model theoretically increases the donation rate by 7% in New South Wales, Australia (35).

Although it is preferable for the majority of donors to meet standard criteria, changes in the population, including the aging demographic, the rising prevalence of chronic noncommunicable diseases (9, 10), along with a decrease in head trauma rates and improved protocols for the care of neurocritical patients, have shifted the balance between standard and extended criteria donors. This has led to a greater emphasis on the use of extended criteria donors and an increasing consideration of broader indications for organ donation (36).

Consequently, we posit some hypotheses to explain these results. Firstly, the focal point of Region 2 activities historically leads in organ donation due to a past surge in donors from crime victims. This has resulted in a higher number of transplants, fostering a positive feedback loop. In contrast, Region 5 faces low donation rates linked to factors such as low confidence in the healthcare system, limited understanding of brain death, and perceived conflicts with funeral traditions. As mentioned earlier, there are sociodemographic, economic, and cultural differences that could account for these results (13, 14); for instance, an older population in the central and western regions of the country, as well as a history of violence and armed conflict in certain cities. Additionally, disparities between rurality and urbanization may be linked to these outcomes.

Our study has some limitations; for example, information bias due to the nature of a retrospective study. In addition, dealing with massive information sources could lead to missing data or measurement errors. To mitigate this issue, researchers thoroughly reviewed the information and standardized variables to ensure data quality. Similarly, cases with missing information were excluded to avoid affecting the statistical analysis. On the other hand, some of the strengths of this study are based on the size of the study population, as it is the largest study published in our country to date. Likewise, information from the regions that perform the most organ transplants in the country was included (25). Therefore, it is possible to consider it as a nationally representative cohort. In spite of this, it is crucial to articulate that these observations are applicable solely to 70% of the Colombian population (8). As such, the conclusions drawn in this study warrant meticulous consideration and must be interpreted within the confines of this specified demographic scope.

Conclusion

This study reports the critical pathway and the dynamics of organ donation and utilization in a cohort of possible deceased organ donors in three regions of Colombia. We found that about one-tenth of donors are effectively used for transplantation purposes, with kidneys being the most frequently procured and transplanted organs, accounting for 68.1%. The discard rate was around 8%. A systematic, organized, and detailed approach to the pathway of the organ donation–transplantation process, like the one presented here, helps to gain insight and understanding into the process of organ donation and organ procurement, highlighting critical points susceptible for intervention to take actions that could improve the donation rates.

Recommendations

In light of these results, it is imperative for decision-makers to implement targeted strategies aimed at enhancing donation acceptance in Colombia. Understanding the multifaceted nature of sociodemographic, economic, and cultural differences that contribute to this reluctance is crucial. Decision-makers should consider tailoring educational campaigns to address specific concerns prevalent in diverse regions, such as the implications of an aging population in central and western areas, the impact of historical violence and armed conflict in certain cities, and the nuances of rural–urban divides. By acknowledging and addressing these factors, policy-makers can formulate comprehensive initiatives that resonate with the population, fostering a more favorable environment for organ donation acceptance.

Author contributions. All authors conceived the original study, collected the data, analyzed the data, interpreted the results, and wrote and revised the manuscript. All authors reviewed and approved the final version.

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Conflict of interest. None declared.

Disclaimer. The opinions expressed in this manuscript are solely the authors' responsibility and do not necessarily reflect the views or policies of the *PAJPH/RPSP* or the Pan American Health Organization (PAHO).

REFERENCES

1. Park C, Jones MM, Kaplan S, Koller FL, Wilder JM, Boulware LE, et al. A scoping review of inequities in access to organ transplant in the United States. Int J Equity Health. 2022;21(1):1–20. Available from: https://doi.org/10.1186/s12939-021-01616-x.
2. Rodrigue JR, Cornell DL, Howard RJ. Organ donation decision: comparison of donor and nondonor families. Am J Transplant. 2006;6(1):190–198. Available from: https://doi.org/10.1111/j.1600-6143.2005.01130.x.
3. Domínguez-Gil B, Ascher NL, Fadhil RAS, Muller E, Cantarovich M, Ahn C, et al. The Reality of Inadequate Patient Care and the Need for a Global Action Framework in Organ Donation and Transplantation. Transplantation. 2022;106(11):2111–2117. Available from: https://doi.org/10.1097/tp.0000000000004186.
4. Stewart D, Hasz R, Lonze B. Beyond donation to organ utilization in the USA. Curr Opin Organ Transplant. 2023;28(3):197–206. Available from: https://doi.org/10.1097/mot.0000000000001060.

5. Neuberger J, Callaghan C. Organ utilization - the next hurdle in transplantation? Transpl Int. 2020;33(12):1597–1609. Available from: https://doi.org/10.1111/tri.13744.
6. Ibrahim M, Callaghan CJ. Beyond donation to organ utilization in the UK. Curr Opin Organ Transplant. 2023;28(3):212–221. Available from: https://doi.org/10.1097/mot.0000000000001071.
7. Nino-Murcia A, Pinto Ramirez JL, Nino-Torres L. Organ transplantation in Colombia. Transplantation. 2018;102(11):1779–1783. Available from: https://doi.org/10.1097/tp.0000000000002409.
8. Grupo Red Nacional de Donación y Trasplantes. Informe Anual 2021 Red de Donación y Trasplantes. Bogotá: Instituto Nacional de Salud; 2021. Available from: https://www.ins.gov.co/BibliotecaDigital/informe-anual-red-de-donacion-y-trasplantes-2021.pdf.
9. Johnston-Webber C, Prionas A, Wharton G, Streit S, Mah J, Boletis I, et al. The National Organ Donation and Transplantation Program in Greece: Gap Analysis and Recommendations for Change. Transpl Int. 2023;36:11013. Available from: https://doi.org/10.3389/ti.2023.11013.
10. Streit S, Johnston-Webber C, Mah J, Prionas A, Wharton G, Casanova D, et al. Ten Lessons From the Spanish Model of Organ Donation and Transplantation. Transpl Int. 2023;36:11009. Available from: https://doi.org/10.3389/ti.2023.11009.
11. Schutter R, Vrijlandt WAL, Weima GM, Pol RA, Sanders JSF, Crop MJ, et al. Kidney utilization in the Netherlands – do we optimally use our donor organs? Nephrol Dial Transplant. 2023;38(3):787–796. Available from: https://doi.org/10.1093/ndt/gfac300.
12. Aristizábal AM, Castrillón Y, Gil T, Restrepo D, Solano K, Guevara M, et al. Manejo actual del donante potencial de órganos y tejidos en muerte cerebral: guía de manejo y revisión de la literatura. Rev Colomb Cir. 2017;32(2):128–145. Available from: https://doi.org/10.30944/20117582.17.
13. Departamento Administrativo Nacional de Estadística. Boletín técnico. Educación formal (EDUC) 2022. Bogotá: DANE; 2023. Available from: https://www.dane.gov.co/files/operaciones/EDUC/bol-EDUC-2022.pdf.
14. Deparetmento Nacional de Planeación. TerriData. Bogotá: DNP; Available from: https://terridata.dnp.gov.co/index-app.html#/descargas.
15. Congreso de Colombia. Ley 1805 del 2016. Bogotá: Congreso de Colombia; 2016.
16. Englbrecht JS, Schrader D, Kraus H, Schäfer M, Schedler D, Bach F, et al. How Large is the Potential of Brain Dead Donors and what Prevents Utilization? A Multicenter Retrospective Analysis at Seven University Hospitals in North Rhine-Westphalia. Transpl Int. 2023;36:11186. Available from: https://doi.org/10.3389/ti.2023.11186.
17. Torres-Gutiérrez M. La evaluación psicosocial de un donante vivo de riñón [Psycho-social evaluation of a living kidney donor]. Rev Colomb Psiquiat. 2018;47(4):252–257. Available from: https://doi.org/10.1016/j.rcp.2017.01.001.
18. Castañeda Millán DA, Alarcón F, Ovalle D, Martínez C, González LM, Burbano Perea L, et al. Actitudes y creencias sobre la donación de órganos en Colombia: ¿Dónde se deben enfocar los esfuerzos para mejorar las tasas nacionales de donación? Rev Fac Med (Bogotá). 2014;62(1):17–25. Available from: https://revistas.unal.edu.co/index.php/revfacmed/article/view/43660/47370.
19. Álvarez-Manduca K, Patino-Jaramillo N, García-Lopéz A, Girón-Luque F. Evaluación del conocimiento en donación de órganos y tejidos de los profesionales de salud asociados a servicios de cuidado crítico y urgencias. Salud UNINORTE. 2021;37(1):22–37. Available from: https://rcientificas.uninorte.edu.co/index.php/salud/article/view/13198.
20. Figueroa Mora MF, Gamboa Bernal GA, editors. Tópicos en Donación y Trasplantes. Bogotá: Grupo Distribuna; 2023. Available from: https://distribuna.com/topicosendonacionytrasplantes/.
21. European Directorate for the Quality of Medicines & HealthCare. Guide to the Quality and Safety of Organs for Transplantation. 7th edition. Strasbourg: EDQM; 2018. Available from: https://www.edqm.eu/en/guide-quality-and-safety-of-organs-for-transplantation.
22. 64th World Medical Association General Assembly. Declaration of Helsinki. Fortaleza, Brazil; 2013 Oct.
23. Ministerio de Salud y Protección Social, Colombia. Resolución número 8430 de 1993. Bogotá: MSPS; 1993.
24. International Summit on Transplant Tourism and Organ Trafficking. The Declaration of Istanbul on Organ Trafficking and Transplant Tourism. Clin J Am Soc Nephrol. 2008;3(5):1227–1231. Available from: https://doi.org/10.2215/cjn.03320708.
25. Instituto Nacional de Salud, Ministerio de Salud y Protección Social, Colombia. Informe ejecutivo Red de Donación y Trasplantes 2022. Bogotá: INS; 2022.
26. Callaghan CJ, Harper SJF, Saeb-Parsy K, Hudson A, Gibbs P, Watson CJE, et al. The discard of deceased donor kidneys in the UK. Clin Transplant. 2014;28(3):345–353. Available from: https://doi.org/10.1111/ctr.12319.
27. Stewart DE, Garcia VC, Rosendale JD, Klassen DK, Carrico BJ. Diagnosing the Decades-Long Rise in the Deceased Donor Kidney Discard Rate in the United States. Transplantation. 2017;101(3):575–587. Available from: https://doi.org/10.1097/tp.0000000000001539.
28. Mojtabaee M, Ghaffarian S, Shahryari S, Beigee FS. Causes of Deceased Donors Loss before Organ Retrieval. Tanaffos. 2018;17(3):172–176. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6428383/.
29. Augsburger AC, Milano ZR, Lapalma MA, Brufman G, Rigalli MA. Asymmetry between recipients and donors as a health problem. Investigation of family acceptance or refusal to donate organs and tissues. Poblac Salud Mesoam. 2021;19(2). Available from: https://doi.org/10.15517/psm.v19i2.46278.
30. Manduca KÁ, Jaramillo NP, López AG, Luque FG. Evaluación del conocimiento en donación de órganos y tejidos de los profesionales de salud asociados con servicios de cuidado crítico y urgencias [Assessment of organ and tissue procurement knowledge in health care workers associated to critical and emergency care units]. Salud UNINORTE. 2021;37(1):21–37. Available from: https://doi.org/10.14482/sun.37.1.616.025.
31. Molina MI, Toro PA, Manzi E, Dávalos D, Torres K, Aristizábal AM, et al. Principales causas de negativa familiar a la donación de órganos y tejidos: 10 años de experiencia en un centro latinoamericano. Nefrología. 2018;38(2):225–227. Available from: https://doi.org/10.1016/j.nefro.2017.05.004.
32. Al Moweshy AA, Fabella EL, Al-Hassan YT, Alramadan HA, Al Abdullah AJ, Al Hassan HI, et al. Association between organ donation awareness and willingness among Saudi university students. J Public Health Res. 2022;11(2):2685. Available from: https://doi.org/10.4081/jphr.2022.2685.
33. Vilayur E, van Zwieten A, Chen M, Francis A, Wyld M, Kim S, et al. Sex and Gender Disparities in Living Kidney Donation: A Scoping Review. Transplant Direct. 2023;9(9):e1530. Available from: https://doi.org/10.1097/txd.0000000000001530.
34. Toews M, Chandler JA, Pope T, Pape R, Weiss M, Sandiumenge A. Legislation and Policy Recommendations on Organ and Tissue Donation and Transplantation From an International Consensus Forum. Transplant Direct. 2023;9(5):e1395. Available from: https://doi.org/10.1097/txd.0000000000001395.
35. Shah KK, Wyld M, Hedley JA, Waller KMJ, De La Mata N, Webster AC, et al. Cost-effectiveness of Kidney Transplantation From Donors at Increased Risk of Blood-borne Virus Infection Transmission. Transplantation. 2023;107(9):2028–2042. Available from: https://doi.org/10.1097/tp.0000000000004632.
36. Estupiñán-Bohórquez A, Acosta-Reyes J, Viasus-Pérez D, García-López A, Patino-Jaramillo N, Girón-Luque F. Trasplante renal de donantes con criterios expandidos en la región Caribe colombiana. Nefrol Latinoam. 2021;18(2):119–127. Available from: https://doi.org/10.24875/nefro.21000028.

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Examen de la dinámica de la donación y utilización de órganos de personas fallecidas en Colombia

RESUMEN

Objetivo. Presentar una descripción integral de la donación, utilización y descarte de órganos en todo el proceso de donación en Colombia.
Métodos. Estudio retrospectivo de 1 451 donantes posibles, distribuidos en tres regiones de Colombia, que fueron evaluados en el 2022. Se describen las características generales, el diagnóstico y las causas de contraindicación de los donantes potenciales.
Resultados. De los 1 451 donantes posibles, 441 (30,4%) cumplían con los criterios de muerte encefálica y constituyeron el conjunto de donantes potenciales. Las familias consintieron la donación de órganos en 141 casos aptos desde el punto de vista médico, mientras que en 60 casos se recurrió a la presunción legal, con lo que se llegó a 201 donantes aptos (13,9%). De estos, 160 (11,0%) fueron donantes reales (en los que se les practicó una incisión quirúrgica para la extracción de órganos o se obtuvo al menos un órgano). En última instancia, hubo 147 donantes utilizados (10,1%) (de los que se trasplantó al menos un órgano). Se observaron diferencias estadísticamente significativas entre las regiones en cuanto a edad, sexo, diagnóstico de muerte encefálica y vía crítica del donante. Se trasplantaron un total de 411 órganos procedentes de 147 donantes utilizados; los riñones fueron los órganos obtenidos y trasplantados con mayor frecuencia, ya que supusieron 280 (68,1%) del total de órganos, seguidos del hígado (85, 20,7%), el corazón (31 , 7,5%), los pulmones (14, 3,4%) y el páncreas (1, 0,2%). La tasa de descarte de los donantes fallecidos disponibles fue del 8,1%.
Conclusiones. Aproximadamente una décima parte de los donantes son utilizados, de hecho, para realizar trasplantes. Estos datos destacan las áreas en las que se han obtenido buenos resultados y aquellas en las que se presentan desafíos, lo cual proporciona una base para futuras mejoras en Colombia.

Palabras clave Obtención de tejidos y órganos; trasplante de órganos; sitio donante de trasplante; trasplantes; donantes de tejidos; Colombia.

Entendendo a dinâmica da doação e do aproveitamento de órgãos de pessoas falecidas na Colômbia

RESUMO

Objetivo. Obter uma visão geral e abrangente da doação, do aproveitamento e do descarte de órgãos em todo o processo de doação na Colômbia.
Métodos. Estudo retrospectivo de 1 451 possíveis doadores em três regiões da Colômbia que foram avaliados em 2022. Foram descritas as características gerais, o diagnóstico e os motivos para a contraindicação de potenciais doadores.
Resultados. Dentre os 1 451 possíveis doadores, 441 (30,4%) preencheram os critérios de morte encefálica, formando o grupo de potenciais doadores. Em 141 casos considerados clinicamente aptos, as famílias consentiram com a doação de órgãos, e em 60 casos utilizou-se o princípio da presunção legal, resultando em 201 doadores elegíveis (13,9%). Desses, 160 (11,0%) foram doadores efetivos (ou seja, doadores nos quais foi feita uma incisão cirúrgica com a intenção de remover um órgão ou pessoas com pelo menos um órgão removido). Por fim, foram identificados 147 doadores utilizados (10,1%) (ou seja, que doaram pelo menos um órgão que foi transplantado). Foram encontradas diferenças estatisticamente significantes entre idade, sexo, diagnóstico de morte encefálica e itinerário crítico de doação entre as regiões. Um total de 411 órgãos foram transplantados de 147 doadores utilizados. Os rins foram os órgãos mais frequentemente removidos e transplantados, representando 280 (68,1%) do total, seguido de 85 fígados (20,7%), 31 corações (7,5%), 14 pulmões (3,4%) e 1 pâncreas (0,2%). A taxa de descarte de doadores falecidos com órgãos removidos foi de 8,1%.
Conclusões. Cerca de um décimo dos doadores são efetivamente usados para fins de transplante. Nossos achados destacam áreas de sucesso e desafios, oferecendo uma base para futuras melhorias na Colômbia.

Palavras-chave Obtenção de tecidos e órgãos; transplante de órgãos; sítio doador de transplante; transplantes; doadores de tecidos; Colômbia.