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Review article

Ethical aspects of Organ Transplantation in Kazakhstan. Literature review

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Abstract

Over the past 50 years, transplantation has evolved into a widely successful practice around the world. However, significant disparities exist between countries regarding access to suitable transplants, as well as in the safety, quality, and effectiveness of the donation and transplantation of human cells, tissues, and organs.

The aim of this review is to define issues of organ transplantation in Kazakhstan worldwide.

The search was conducted using electronic databases, particularly PubMed, Google Scholar, Medline, and Scopus. Titles and abstracts of identified studies were screened for relevance, and full-text articles were reviewed for eligibility.

The following keywords were used in the search: solid organ transplantation, ethics in organ transplantation, organ preservation and challenges in organ transplantation. The search depth is 10 years.

. The specifics of organ donation require addressing a number of complex moral, ethical, and legal issues, as it lies at the intersection of life and death, simultaneously affecting the interests of both deceased and living individuals. In this context, changing the attitudes of the medical community, particularly the staff of intensive care units, towards the challenges of organ donation is crucial for the advancement of transplantation in Kazakhstan.

Keywords: Organ Transplantation, Living Donors, Transplant Recipients, Organ Preservation Solutions, Ethics in organ transplantation

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Introduction

Over the past 50 years, transplantation has evolved into a widely successful practice around the world. However, significant disparities exist between countries regarding access to suitable transplants, as well as in the safety, quality, and effectiveness of the donation and transplantation of human cells, tissues, and organs. Ethical considerations play a crucial role in this field, especially given the unmet needs of patients and the shortage of available transplants, which can create opportunities for trafficking in human body parts for transplantation [1].

Organ transplantation remains one of the most spectacular and consequential fields in 21st-century medicine, integrating advances in surgery, immunology, genetics, pharmacology, intensive care medicine, epidemiology, and ethics. The idea of prolonging life and wellbeing through organ transplantation captures worldwide attention of medical practitioners, students, and scientists alike. Today, organ transplantations are a common feature of medical practice in developed countries and increasingly in developing countries, and new advances in the field are frequently reported in the lay press.

Organ transplantation is among the most complex procedures in medicine for various reasons. It necessitates addressing the medical needs of the recipient while also coordinating with an appropriate donor, whether living or deceased. Both scenarios involve intricate ethical considerations, often complicated by subtle ethical and religious factors. One of the most contentious and challenging issues in the field is the ethical debate surrounding the timely and definitive determination of death. Public views on this issue are often shaped by religious and cultural beliefs, leading to variations in ethical standards across different cultures and religions [2].

The aim of this review is to define issues of organ transplantation in Kazakhstan worldwide.

Material and methods

The search was conducted using electronic databases, particularly PubMed, Google Scholar, Medline, and Scopus. Titles and abstracts of identified studies were screened for relevance, and full-text articles were reviewed for eligibility.

The inclusion criteria for this review encompassed literature reviews, meta-analyses, and comparative studies that address challenges in solid organ transplantation from both clinical and healthcare perspectives. Studies identifying challenges within ethical frameworks and management issues related to organ transplantation were also included. Additionally, research reporting on advancements in organ preservation was considered. Both published and unpublished studies were incorporated into the review.

The exclusion criteria eliminated studies that do not provide clear definitions or results for the challenges in organ transplantation, studies not available in English, animal studies, and in vitro studies are excluded.

The following keywords were used in the search: solid organ transplantation, ethics in organ transplantation, organ preservation and challenges in organ transplantation. The search depth is 25 years. The selection of a 25-year search depth for the study was driven by the need to balance comprehensiveness with relevance. This time frame ensures inclusion of foundational studies that provide critical background information and contextual understanding. Simultaneously, it filters out information that may have become outdated, as statistical data.

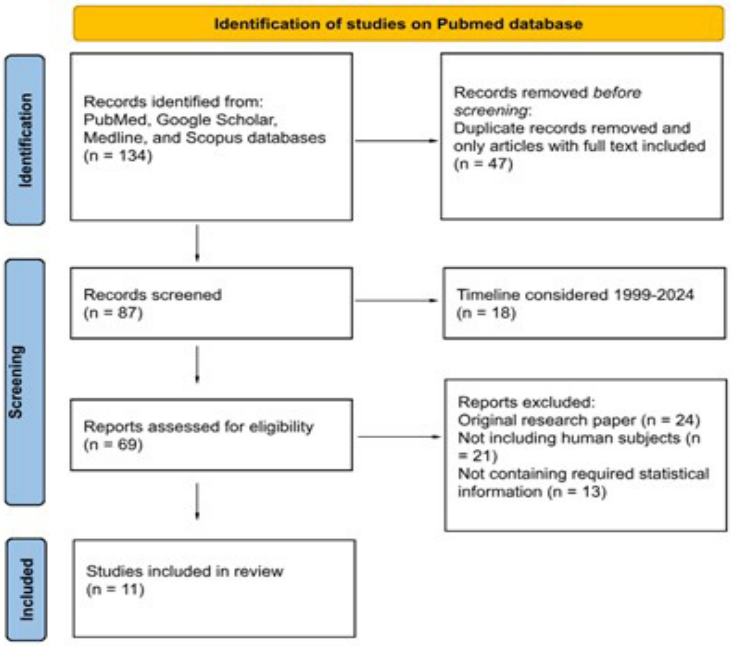

Figure 1 - Flow chart showing selection of studies for literature review

Results

Identifying and addressing public views towards the consent system for organ procurement is key in developing effective and ethical organ donation policies. Public awareness of the consent model and understanding of the procedures to express consent or refusal for organ donation are lower in opt-out countries compared to opt-in countries. Despite the growing trend in Europe and other regions to shift from opt-in to opt-out policies, the majority

of people tend to support the opt-in system, regardless of the consent model in place in their country. Furthermore, when given multiple options, people generally prefer opt-in or mandatory choice over opt-out [3]. The Table 1 summarizes the modern options of donation, including the ethical considerations regarding the chosen option and countries, supporting them.

One major concern with the opt-out system is the ethical issues it raises. For instance, presumed consent for organ donation reached its peak in the US in 1990 but was later rejected in 2006 by the UAGA, partly due to concerns about professionals abusing the authority that presumed consent entailed.

Furthermore, there is concern as to whether presumed consent accurately reflects the patient's wishes, with the potential to violate a donor's autonomy if they did not want to donate but failed to register to opt-out.

Table 1 - The description of donation options

Option	Description	Ethical consideration	Consent	Countries, approving chosen option [30]
Opt-in	Explicit and active agreement on organ donation	Family members misalignment with individual's wishes	Consent of a donor	United Kingdom, Canada, Brazil, Demark
Opt-out	Explicit disagreement on organ donation	Failing to register for opt-out option	Presumed consent of a patient to be donor unless registering for opt-out	France, Wales, Scotland
Mandated consent	Agreement on organ donation	Forcing individuals to make a choice	Consent of a donor	New Zealand

An alternative option to both the opt-in and opt-out systems is mandated consent, which requires that competent adults register their intent to donate or not donate. It allows individuals to choose which organs they want to donate and to give permission to relatives to have the final say. However, if relatives are not granted this permission, then the wishes of the deceased are final and cannot be superseded. Mandated consent removes the ethical concerns regarding the intentions of those who fail to register a choice. However, it poses other ethical implications, such as forcing individuals to make a choice [4].

In practice, both opt-in and opt-out systems often uphold the status quo when family consent is involved. In opt-in systems, families may feel uncertain about their loved ones' wishes unless there is explicit documentation or prior discussion regarding organ donation. In opt-out systems, the lack of an entry in the opt-out register is not typically viewed as a definitive indication of the individual's desire to donate. This raises questions about whether the person was aware of, understood, or engaged with the opt-out policy, unless the family had previously talked about donation preferences.

While opt-out legislation is a widely recognized approach, it does not necessarily address the challenges of securing donations at the bedside. As a result, many countries with high donor rates have adopted strategies to improve communication with potential donor families when seeking consent or authorization for donation. Additionally, numerous countries have aimed to boost family consent rates by encouraging individuals to clearly express their donation preferences during their lifetime [5].

The success of organ donation policies seems to depend largely on effective communication, backed by strong government commitment and responsiveness to public opinion when needed. It is vital to invest significantly in human resource infrastructure within hospitals, ensuring that staff are prepared to handle sensitive discussions with families and identify potential donors. Furthermore, robust technical support is essential for managing donor registries and transplant waiting lists. These systems must be transparent and accountable, with accurate and verified data being made publicly accessible. Such transparency and accountability are crucial for building public trust, which is essential for the effectiveness of organ donation programs [6].

In Kazakhstan, the legal framework operates on a "presumed consent" model for cadaveric organ donation. Under this approach, tissues or organs can be used for transplantation even if the deceased individual did not explicitly document their consent while alive. However, the deceased's relatives have the right to object to the removal of tissues and organs. This model of presumed consent is also implemented in countries such as Spain, Portugal, France, Belgium, Austria, Russia, and Belarus. Moreover, the concept of presumed consent has been extensively analyzed by philosophers and experts in biomedical ethics [7].

Challenges of Organ Shortage for Transplantation

Recent developments in immunology, tissue engineering, and the use of animal organs in xenotransplantation offer promising solutions to many challenges but also introduce new ethical and medical concerns that need to be carefully considered by both the medical community and society [8].

The most significant challenge in organ transplantation today is the shortage of available organs. To address this issue, several strategies have been adopted to increase the donor pool:

-live organ donations;

-national initiatives to boost deceased organ donations;

-split organ donations;

-paired exchange programs;

-national sharing systems;

-the use of expanded criteria donors [9].

The Republican Center for Transplant Coordination and High-tech Medical Services (referred to as the Coordination Center) was established in 2018, modeled in accordance with the Spanish system. According to the data from the Coordination Center, as of 2023, there are 3,916 patients on the waiting list in need of organ transplantation, including 110 children.

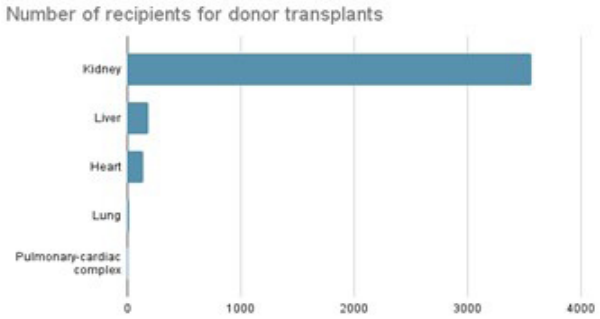

Figure 2 - Number of recipients for donor transplants

Among those, the vast majority of the patients require a kidney transplant, which is 3,565 people (91.2%), followed by 185 patients (4.5%) in need of a liver transplant, 146 (3.7%) - heart transplant, 15 (0.4%) – lung transplant, and 5 (0.1%) are in need of pulmonary-cardiac complex, as shown in Figure 2. Currently, there are 8 transplant centers in the country, staffed by highly qualified specialists and equipped according to current standards. From 2012 to October 2023, 2573 transplant surgeries were conducted, with 424 (17.9%) from deceased donors. Due to a low number of donors and a significant number of refusals for deceased organ donation, the number of organ transplants in Kazakhstan from living donors is much higher than those from deceased donors, accounting for 82.1% and 17.9%, respectively [10].

Comparatively, other countries also have a pressing need for increasing transplant donor number, and Table 2 presents some of the common managements of the discussed issue [31].

Table 2 - Management of the need for transplants, implemented in different countries

Countries	Management of the need for transplants
Asian countries	Increasing numbers of living donor liver transplants (LDLT)
Spain	Uses a soft opt-out system with high transplant rates. Has a network of transplant coordinators to ensure the efficient use of organs.
Austria, Belgium, and Argentina	Implement opt-out systems where organs are available unless an objection is registered.
New Zealand	Uses a mandated choice system, where people decide to be donors when applying for a driver's license.

In Asia, the issue has been effectively managed through a growing number of living-donor liver transplants (LDLT). In contrast, Western countries have not experienced a significant increase in LDLT over the past decade, and the demand for deceased donor liver transplants remains high. Consequently, considerable efforts are being made to expand the pool of available deceased donor organs [11].

The shortage of available organs continues to be a significant challenge in liver transplantation, prompting extensive efforts over the past decade to broaden the pool of deceased donors. Recent improvements include enhanced selection and management of donors following circulatory arrest, the use of hypothermic and normothermic perfusion techniques, reduced reliance on standard immunosuppressive protocols, and the introduction of new immunosuppressive drugs. Additionally, there has been a renewed focus on liver immunology and the effects of antibody-mediated rejection. Collectively, these advancements have contributed to an expanded donor pool and better patient outcomes [11, 12].

Organ Preservation

Static cold storage (SCS) in UW solution, pioneered by Folkert Belzer at the University of Wisconsin around 40 years ago, continues to be the gold standard for organ preservation in transplantation. However, emerging machine perfusion techniques are rapidly becoming a viable alternative. These techniques are particularly beneficial for marginal organs from donation after circulatory death or extended criteria donors. They extend the duration of ex-vivo preservation and allow for objective evaluation of tissue quality and viability [13].

The use of static cold storage has yielded satisfactory outcomes across solid organ transplantation. However, with the growing reliance on organs from extended criteria donors and donations after cardiac death, static cold storage alone is insufficient to achieve the desired post-transplant results for patients. The absence of oxygen, coupled with ongoing anaerobic metabolism that leads to organ damage and ischemia-reperfusion injury (IRI) in recipients, is particularly pronounced and more harmful in these marginal donor organs [14, 15].

The **Organ Care System** (OCS) allows for the ex-vivo preservation of donor organs in a near-physiologic state, significantly extending the transportation time and maintaining organ viability, which is critical for long-distance transplants. Its use has shown promising results in improving post-transplant outcomes, as seen in heart transplant programs in Kazakhstan [32]. However, limitations include the high cost of the system, the need for specialized personnel, and the potential for mechanical complications during transport. Further studies are needed to establish standardized protocols and evaluate the long-term efficacy of OCS compared to traditional cold storage methods.

The table compares key outcomes between heart transplant patients using the Blood Cardioplegia and Custodiol solutions with the Organ Care System (OCS) [32]. Both groups achieved a 100% 30-day survival rate. This table highlights the ethical and practical challenges of organ preservation in heart transplantation.

Both the Blood Cardioplegia and Custodiol groups achieved high survival rates, but differences in metabolic stability, ICU stay, and ECMO duration point to the complexities of maintaining organ viability. The Blood Cardioplegia group showed reduced lactate accumulation and shorter recovery times, suggesting potential improvements in organ preservation. These results underscore the ongoing ethical challenge of ensuring optimal organ function while minimizing harm, risk, and resource use, emphasizing the need for continued advancements in preservation techniques to enhance transplant outcomes and address the organ shortage crisis effectively.

Table 3 - Characteristics of a current OCS system [32]

Parameter	Blood Cardioplegia Group	Custodiol Group	P-Value
30-day Survival Rate (%)	100	100	N/A
Total Warm Ischemic Time (min)	84.2 ± 28	86.9 ± 8.4	0.001
Ex Vivo Perfusion Time (min)	266.5 ± 86.7	260.4 ± 88.4	0.87
Venous Lactate at Start (mmol/l)	2.2 ± 0.7	3.4 ± 0.8	0.001
Venous Lactate at End (mmol/l)	5.0 ± 1.9	9.2 ± 2.1	0.001
ICU Stay (days)	11.7 ± 10.3	19.6 ± 13.0	0.44
ECMO Duration (hours)	29.5 ± 28.4	78.4 ± 89	0.002

The Definition of Death and Kazakhstan's Legal Framework for Brain and Respiratory Death

According to paragraph 3 of Article 153 of the Code of the Republic of Kazakhstan "On the Health of the People and the Healthcare System," irreversible brain death is defined as the cessation of brain activity due to the death of brain matter, during which artificial measures may be taken to maintain the functions of the organs. Irreversible brain death is confirmed by a medical organization's board based on a set of signs indicating the cessation of central nervous system functions, as well as clinical tests and other diagnostic studies in the manner determined by the authorized body [16].

The procedure for diagnosing brain death is approved by the Order of the Acting Minister of Health of the Republic of Kazakhstan dated October 27, 2020, No. ҚР ДСМ-156/2020 "On Approving the Rules for Confirming Irreversible Brain Death and the Rules for Discontinuing Artificial Measures to Maintain Organ Functions in the Event of Irreversible Brain Death" [17].

To confirm irreversible brain death, the head of the healthcare organization appoints a permanent committee composed of at least three members:

-the committee chair, who is either the head of the healthcare organization or the deputy head for medical affairs;

-a neurologist or neurosurgeon with at least five years of experience in the field;

-an anesthesiologist-resuscitator with at least five years of experience in the specialty.

If special studies are conducted (such as electroencephalography or angiography), the committee includes a specialist in the relevant field with at least five years of experience, who may also be invited from other healthcare organizations on a consultative basis. Specialists involved in organ retrieval and transplantation are not included in the committee [2].

Therefore, improving the efficiency of conducting supplementary tests during the brain death diagnosis process in a timely and professional manner could lead to better outcomes over time, but this is yet to be determined [18].

While the need to define brain death is globally recognized and widely accepted, the methods and responsibilities vary significantly between countries and even among hospitals within the same country. From a legal standpoint, each country or state has its own regulations regarding death, which hospitals use to establish their criteria for determining brain death. As a result, there is considerable variability in how brain death is determined both between and within individual hospitals in the United States and Europe [19, 20].

Miller et al. [21] examined the concept of brain death within Islam, noting that it is recognized as true death by many medical organizations and Islamic scholars, including the Islamic Fiqh Academies of the Organization of the Islamic Conference, the Muslim World League, the Islamic Medical Association of North America, and various legal bodies in Islamic countries. However, there is not unanimous agreement within the Muslim world, with a significant minority adhering only to cardiopulmonary criteria for death.

Truog and Miller [22] aim to shift the discussion on brain death by differentiating between brain death as a biological phenomenon and brain death as a legal status. They argue that brain death does not align with any biologically valid definition of death, a fact that has been known for decades. Despite this, brain death remains accepted as a legal status that allows individuals to be treated as deceased. The analogy between "legally dead" and "legally blind" demonstrates how we can adopt clear legal definitions that do not necessarily match biological reality. This distinction not only clarifies the debate on brain death but also has practical implications. They suggest that recognizing brain death as a social construct rather than a biological fact might facilitate changes that better serve both organ donors and recipients [22].

Challenges Related to Ethical Considerations in Organ Transplantation

Challenges related to ethical considerations in organ transplantation are highly complex due to multiple factors. These include religious beliefs, cultural norms, and societal traditions, which should be considered in addition to the scientific and legal aspects of medical ethics [23].

The ethical and moral concerns in organ transplantation can relate to both living and deceased donors. For living donors, the primary ethical issue is the risk of physical and psychological harm, as surgical intervention can lead to trauma and uncertainty regarding the donor's health post-donation. This raises concerns about the potential violation of the medical principle "do no harm." For deceased donors, ethical challenges include determining death, obtaining proper consent, and navigating religious beliefs. These issues highlight the complexities and responsibilities involved in organ transplantation [24].

Ethical guidelines for live organ donation differ from those for deceased donors and are closely examined by ethicists, religious groups, and the medical community. Most live organ donations involve kidney transplants, followed by partial liver and lung transplants. The central ethical principle for live donations is to minimize or avoid harm to the donor. Organ donations between family members are generally viewed positively by society, and altruistic donations—those made purely out of a desire to help without financial compensation—are highly valued. Conversely, any form of payment for organs is usually deemed unacceptable. Although some argue that individuals should have the right to sell their organs, the prevailing stance is that this practice is unethical and should be banned. Organ trafficking remains a significant global issue, and modern societies are strongly opposed to it, with international efforts focused on preventing such activities [25, 26].

Ethical and legal considerations in organ removal from both living relatives and non-relatives, consent for organ donation, and how to obtain it, as well as issues related to justice and resource allocation, the fundamental rights of donors and recipients, and adherence to ethical standards in handling organs from brain-dead patients, are all critical aspects of the ethical landscape in organ transplantation. Additionally, advancements in research and new transplant technologies bring further ethical concerns about their use. As ethical debates and critiques are crucial for researchers and policymakers, it is essential to carefully address the various issues in transplantation. With the development of new technologies and scientific advancements in this field, it is important to seek logical solutions that align with Kazakhstan's culture, beliefs, and legal framework.

Discussion

In accordance with WHO Guiding Principle 3, efforts should focus on maximizing the therapeutic potential of donations from deceased individuals while minimizing risks to living donors. It is crucial for communities and healthcare professionals to enhance their understanding of donation and transplantation, as education plays a vital role in the success of deceased donation programs.

Despite the frequent use of materials from deceased donors, living donations remain essential for certain types of transplants or to address the limited supply from deceased donors and meet patient needs. Although living donation involves significant risks to the donor, it continues to be practiced.

Given the ethical and safety risks associated with procuring human materials from both deceased and living donors, as well as the subsequent allogeneic transplantation, health authorities must implement stringent controls and effective oversight to ensure the protection of both donors and recipients. The Guiding Principles stress the importance of providing optimal care for both parties.

Transparent oversight by health authorities is also critical for maintaining public trust in the transplantation system. Moreover, the decision to become a donor is often driven by the hope that it may ultimately benefit the health needs of the donor's family [27].

In the study Doskhan et all Of the 1,176 respondents, 422 participants (36%) agreed to be posthumous donors, while 644 participants (55%) declined. A total of 88 participants (7.6%) were unsure about their decision, and the remaining 22 participants did not answer this question.

Out of the 1,176 respondents, 991 (84%) were aware that organ transplantation is conducted in the country, of which 384 participants (38.7%) agreed to posthumous donation, while 607 participants (61.2%) declined.

Among the 185 participants (16%) who were not informed about organ transplantation in the country, 49 participants (26.5%) agreed to posthumous donation, while 136 participants (73.5%) declined.

In conclusion, it was found that informed participants agreed to posthumous donation in 38.7% of cases, while only 26.5% of uninformed participants agreed to donate [28].

As of January 10, 2024, there are 3,961 people on the organ transplant waiting list in Kazakhstan, including 104 children. From 2012 to 2023, a total of 2,550 organ transplants were performed, comprising 424 organs from deceased donors and 2,126 organs from living donors. Given the large number of people in need and the relatively small number of transplants conducted, the organ recipient registry (waiting list) plays a crucial role.

The waiting list is a registry of patients who are eligible for organ transplants from deceased donors. According to Article 209, Paragraph 6 of the Republic of Kazakhstan Code of July 7, 2020, "On the Health of the People and the Healthcare System," a registry of potential organ (or part of an organ) and tissue (or part of tissue) recipients is established to ensure organ transplantation. The medical information system for donor and recipient accounting matches donor-recipient pairs automatically, based on blood group compatibility (ABO system), urgency status, histocompatibility (HLA typing), and the duration on the unified waiting list.

A critical issue in organ transplantation is the allocation of donor organs from deceased donors. This process involves matching the most suitable donor with recipients, ensuring that donor organs are distributed fairly and equitably among patients while also aiming for the best possible transplant outcomes to optimize patient treatment.

The waiting list is maintained separately for each type of transplantable organ. It is updated on a monthly basis or more frequently if there are changes in the urgency status of recipients. The waiting list information is organized into two main sections: one provides general details applicable to all organ types, while the other contains specific information relevant to each organ type, such as hearts, kidneys, livers, or lungs.

According to GODT data, Kazakhstan was ranked 11th in 2022 for liver transplants (LTx) from living donors per million population (pmp), a drop from 8th place in 2021. Despite this, Kazakhstan's overall pmp rates for liver transplants remain relatively low, with the country ranked 48th out of 91 countries in 2021 and 51st in 2022. However, Kazakhstan is a leading performer in liver transplantation within Central Asia, surpassing other regional countries in pmp rates. Among post-Soviet nations, Kazakhstan held the 5th position in both 2022 and 2021, trailing behind Lithuania,

Belarus, Estonia, and Georgia. Generally, Kazakhstan's liver transplantation activities are similar to trends observed in Southeast Asia, marked by a high proportion of transplants from living donors and relatively lower overall pmp rates [29].

Conclusion

The current level of healthcare in Kazakhstan enables the provision of high-tech services in the field of "organ and tissue transplantation" to the population. The state fully funds the costs associated with these operations, including subsequent rehabilitation of recipients and the provision of immunosuppressive medications. However, the development of organ transplantation in Kazakhstan faces significant challenges, primarily due to public resistance and low awareness levels. Organ donation is not feasible without the participation of society; only through public commitment to organ donation can the lives of terminally ill individuals be saved. Additionally, there is low engagement among healthcare professionals in donor hospitals.

The specifics of organ donation require addressing a number of complex moral, ethical, and legal issues, as it lies at the intersection of life and death, simultaneously affecting the interests of both deceased and living individuals. In this context, changing the attitudes of the medical community, particularly the staff of intensive care units, towards the challenges of organ donation is crucial for the advancement of transplantation in Kazakhstan.

Conflict of interest. The authors declare that they have no confict of interest.

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16. Об утверждении правил констатации необратимой гибели головного мозга и правил прекращения искусственных мер по поддержанию функций органов при необратимой гибели головного мозга. Приказ и.о. Министра здравоохранения Республики Казахстан: от 27 октября 2020 года №ҚР ДСМ-156/2020. Режим доступа: https://adilet.zan.kz/rus/docs/V2000021531

Ob utverzhdenii pravil konstatacii neobratimoj gibeli golovnogo mozga i pravil prekrashheniya iskusstvenny`x mer po podderzhaniyu funkcij organov pri neobratimoj gibeli golovnogo mozga. Prikaz i.o. Ministra zdravooxraneniya Respubliki Kazaxstan (On the approval of the rules for the establishment of irreversible brain death and the rules for the termination of artificial measures to maintain organ functions in case of irreversible brain death. Order of the Acting Minister of Health of the Republic of Kazakhstan) [in Russian]: ot 27 oktyabrya 2020 goda №ҚR DSM-156/2020. Rezhim dostupa: https://adilet.zan.kz/eng/docs/V2000021531

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Органдарды трансплантациялаудағы өзекті мәселелер. Әдебиетке шолу

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Түйіндеме

Соңғы 50 жылда трансплантация әлемде кеңінен табысты практикаға айналды. Алайда, елдер арасында донорлық органдарға қол жетімділік, сондай-ақ адам жасушалары, тіндері мен органдарын донорлау және трансплантациялау қауіпсіздігі, сапасы және тиімділігінде айтарлықтай айырмашылықтар бар.

Осы шолудың мақсаты — Қазақстандағы орган трансплантациясының мәселелерін әлемдік контексте анықтау.

Іздеу электронды дерекқорларды пайдалана отырып жүргізілді, әсіресе PubMed, Google Scholar, Medline және Scopus. Айқындаған зерттеулердің тақырыптары мен аннотациялары таңдалды, толық мәтінді мақалалар сәйкестік үшін қаралды.

Іздеуде келесі түйін сөздер қолданылды: қатты органдар трансплантациясы, трансплантациядағы этика, органдарды сақтау және трансплантация мәселелері. Іздеу тереңдігі — 10 жыл.

Орган донорлығына тән ерекшеліктер бірнеше күрделі моральдық, этикалық және құқықтық мәселелерді шешуді қажет етеді, себебі бұл өмір мен өлім арасындағы шекарада орналасып, қайтыс болған және тірі адамдардың мүдделерін қамтиды. Осы контексте, медициналық қауымдастықтың, әсіресе қарқынды терапия бөлімшелерінің қызметкерлерінің орган донорлығына қатысты көзқарасын өзгерту Қазақстанда трансплантацияның дамуы үшін маңызды.

Түйін сөздер: Орган трансплантациясы, тірі донорлар, трансплантат алушылар, органдарды сақтау шешімдері, трансплантациядағы этика.

Текущие проблемы трансплантации органов. Литературный обзор

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Резюме

За последние 50 лет трансплантация стала широко успешной практикой по всему миру. Однако существуют значительные различия между странами в доступе к подходящим трансплантатам, а также в безопасности, качестве и эффективности донорства и трансплантации человеческих клеток, тканей и органов.

Цель данного обзора — определить проблемы трансплантации органов в Казахстане в мировом контексте.

Поиск проводился с использованием электронных баз данных, таких как PubMed, Google Scholar, Medline и Scopus. Были отобраны заголовки и аннотации выявленных исследований, и полнотекстовые статьи были рассмотрены на предмет соответствия.

В поиске использовались следующие ключевые слова: трансплантация твердых органов, этика в трансплантации органов, сохранение органов и проблемы трансплантации органов. Глубина поиска — 10 лет.

Специфика донорства органов требует решения ряда сложных моральных, этических и юридических вопросов, так как она находится на пересечении жизни и смерти, затрагивая интересы как умерших, так и живых лиц. В этом контексте изменение отношения медицинского сообщества, особенно сотрудников отделений интенсивной терапии, к проблемам донорства органов имеет решающее значение для развития трансплантации в Казахстане.

Ключевые слова: Трансплантация органов, живые доноры, реципиенты трансплантатов, решения по сохранению органов, этика в трансплантации органов.