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STRUCTURE AND PROVISION OF RENAL REPLACEMENT THERAPY AND KIDNEY TRANSPLANT SERVICES IN KYRGYZSTAN

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We present an overview of the current status and development of renal replacement therapy and kidney transplantation in Kyrgyzstan. The paper outlines the key stages in the evolution of transplant care in Kyrgyzstan and references the regulatory and legal frameworks governing the provision of medical services in this field. In addition, it analyzes transplant activity and the demographic characteristics of kidney donors and recipients.

Keywords: renal replacement therapy, kidney transplantation, transplant center, registry.

BACKGROUND

Kidney transplantation (KT) in patients with end-stage kidney disease (ESKD) in Kyrgyzstan, as in many other countries, is recognized as one of the major achievements of modern medicine. The first successful kidney transplant (KT), performed in 1954, demonstrated the feasibility of the procedure as an effective treatment for patients with terminal renal failure [1]. Since then, KT has become established as the optimal treatment modality for ESKD.

The need to develop a national KT program is supported by evidence showing superior survival rates and improved quality of life in transplant recipients compared with patients receiving other forms of renal replacement therapy [2]. Several studies [3, 4] have demonstrated significant improvements in 1-, 3-, and 5-year KT outcomes over the past 15 years [5].

However, transplant outcomes are largely dependent on the quality of patient management in both the early and long-term postoperative periods. Inadequate follow-up of KT recipients significantly increases the risk of post-transplant complications and negatively affects patients' quality of life and social adaptation [6].

It has been established that the more pronounced the decline in glomerular filtration rate (GFR) in KT recipients, the greater the number of factors that require appropriate management to reduce the risk of further graft dysfunction and loss [7]. These risk factors include the underlying etiology of chronic kidney disease (CKD), elevated body mass index, anemia, as well as comorbid conditions such as diabetes mellitus, heart failure, arterial hypertension, and active malignancy. Implementation of structured educational programs, as well as donor support and systematic monitoring before, during, and after transplantation, represents one of the key components of an effective transplant program [8].

RESULTS AND DISCUSSION

Renal replacement therapy using maintenance hemodialysis in Kyrgyzstan is financed by the Mandatory Health Insurance Fund (MHIF), which has contracts with 37 healthcare institutions, 35 of which are private and 2 are state-owned.

Since March 2022, the MHIF has been responsible for maintaining a registry of patients with stage 5 CKD and for managing a unified national database. As of 1 July 2024, the hemodialysis section of the registry included 2,975 patients [9].

Selection of candidates for organ and tissue transplantation in Kyrgyzstan is carried out by a commission under the Ministry of Health (MoH), comprising medical experts with appropriate training and expertise in transplant medicine [10].

As of February 2025, the National Center for Maternal and Child Welfare (NCMCW) registry included 128 patients listed as KT candidates.

The national KT program in Kyrgyzstan was initiated in 2012, with the first KT procedures performed at two medical institutions: NCMCW and the Research Institute of Cardiac Surgery and Organ Transplantation.

At present, KT in the country is performed exclusively at NCMCW in Bishkek and is limited to living-related donor transplantation, in accordance with regulations issued by Kyrgyzstan's Ministry of Health [11].

Between 2018 and 2024, a total of 63 KTs were performed in Kyrgyzstan, including 62 adult recipients and one pediatric recipient. The annual distribution of transplant procedures is presented in Table.

Between 2023 and 2024, a marked increase in the number of KT procedures was observed. Specifically, 8 procedures were performed in 2023 compared with 21 in 2024, representing a 2.6-fold increase ($p < 0.001$). The

average monthly number of surgeries increased from 0.7 in 2023 to 1.8 in 2024 (Fig. 1).

Men predominate annually in the recipient population (Fig. 2).

As shown in Fig. 2, transplant activity in Kyrgyzstan increased steadily between 2018 and 2024, with a consistently higher proportion of male recipients. Among

Table

Trends in Kidney transplants in Kyrgyzstan (2018–2024). Data from the National Center for Maternal and Child Welfare

	2018	2019	2020	2021	2022	2023	2024
Number of kidney transplants by year	3	9	8	1	13	8	21

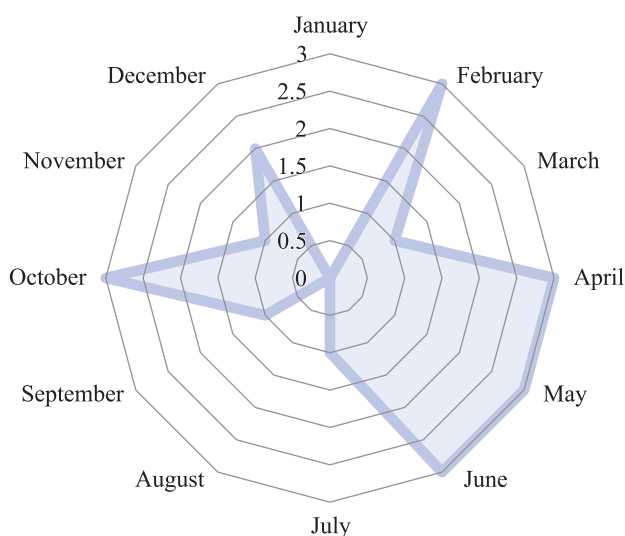


Fig. 1. Monthly distribution of kidney transplant procedures in 2024

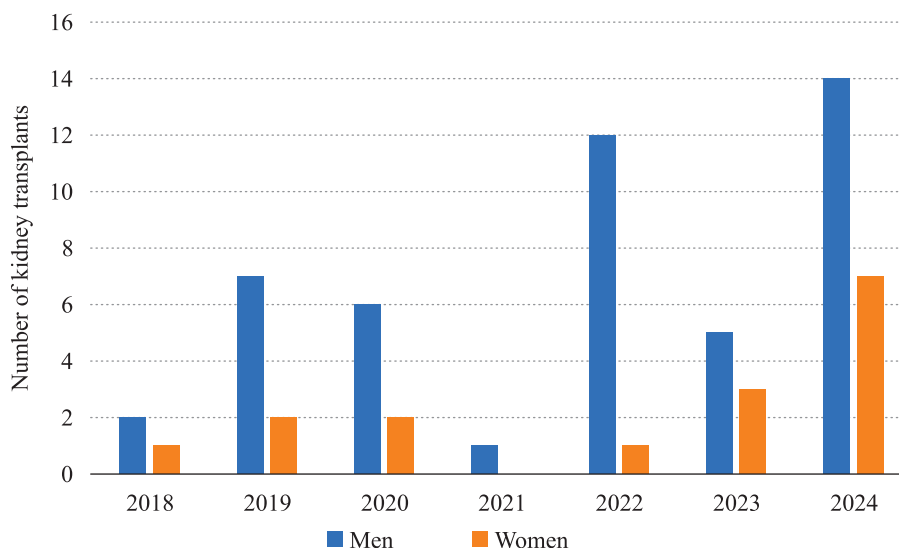


Fig. 2. Kidney transplant activity in Kyrgyzstan (2018–2024)

donors, males accounted for 55.5% and females for 44.5%.

The significant rise in transplant activity observed in 2024 ($p < 0.001$) can be attributed to the implementation of a new national strategy aimed at developing transplant services and transitioning to a budget-based funding model [12, 13]. Prior to this transition, KT procedures were performed exclusively using living-related donors on a fee-for-service basis [13].

It should be noted that, according to the criteria established by the Patient Selection Commission under Kyrgyzstan’s Ministry of Health, only the recipient’s biological relatives are eligible to serve as living donors [14].

Fig. 3 presents the age distribution of kidney donors in Kyrgyzstan between 2018 and 2024. Among successful donors, 1 individual was younger than 18 years, 19 were aged 19–30 years, 34 were aged 30–40 years, and 9 were older than 40 years. Over time, with the increasing number of transplant procedures, there has been a trend toward an increase in the number of donors aged ≥ 30 years.

A centralized system for monitoring patients with transplanted organs has now been established in Kyrgyzstan. During the first 3 months following transplantation, all recipients are monitored in Kyrgyzstan. Thereafter, patients – including those who underwent transplantation abroad – are followed up at the outpatient clinic of the National Hospital under Kyrgyzstan’s Ministry of Health. This institution is also responsible for providing immunosuppressive therapy to transplant recipients.

In 2024, the number of KT recipients under follow-up in Kyrgyzstan increased by 19.2%, reaching a total of 738 patients.

Previous studies have shown that careful selection of donors and recipients, together with close monitoring of immunosuppressive therapy, are critical for minimizing

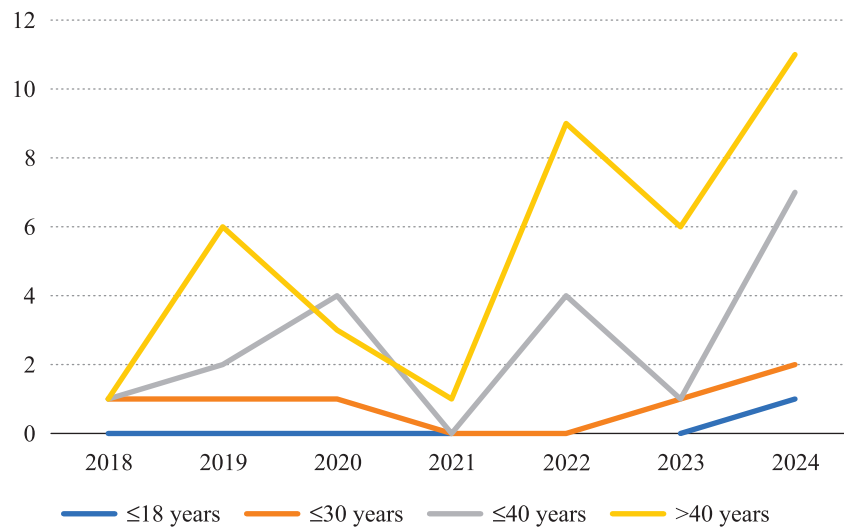


Fig. 3. Age distribution of effective organ donors in Kyrgyzstan (2018–2024)

the risks of infectious complications and graft rejection [15, 16]. Adherence to these principles is reflected in the outcomes of the KT program in Kyrgyzstan: among 63 transplant recipients, only three (4.7%) experienced an episode of acute rejection, and one patient (1.6%) required resumption of maintenance hemodialysis.

CURRENT STATUS AND FUTURE GOALS

As of 2025, transplant medicine is a rapidly developing area of healthcare in Kyrgyzstan. A tissue-typing laboratory has recently been established.

The Cabinet of Ministers of Kyrgyzstan has outlined several strategic priorities for the Ministry of Health. These include further development of the national KT program, expansion of geographic access and number of transplant centers, establishment and continuous updating of a comprehensive registry of patients requiring kidney KT, increasing the number of transplant procedures in line with population needs, ensuring long-term, structured follow-up of transplant recipients, and providing access to immunosuppressive therapy.

CONCLUSION

The successful implementation of a KT program in Kyrgyzstan depends on several key factors, including careful donor–recipient selection, individualized immunosuppressive therapy, monitoring blood levels of immunosuppressive drugs, and timely identification and management of comorbid conditions. Recognition and control of risk factors for graft dysfunction are essential to prevent a return to renal replacement therapy and to improve recipients' quality of life.

FINDINGS

1. Between 2018 and 2024, transplant activity in Kyrgyzstan increased substantially. Male donors predomi-

nated (55.5%), with the majority aged 30–40 years ($n = 34$) and 19–30 years ($n = 19$).

2. Living-related donation remains the only source of organs for KT in Kyrgyzstan. A total of 63 kidney transplants were performed between 2018 and 2024, with the highest annual number recorded in 2024 ($n = 21$). Transplant procedures were performed in both adult and pediatric recipients.
3. A centralized system for monitoring transplant recipients and providing immunosuppressive therapy has been established in Kyrgyzstan. As of the end of 2024, 738 patients with transplanted kidneys were under follow-up.

The authors declare no conflict of interest.

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