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The Influence of the Time Factor and Marital Status on the Quality of Life of Patients After Kidney Transplantation in Uzbekistan

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Abstract

***Background*:** Currently, compared to program hemodialysis and peritoneal dialysis, kidney transplantation is considered to be the preferred method of renal replacement therapy in patients with end-stage chronic kidney disease (CKD) in terms of patient survival and improvement in their quality of life (QOL). This study aimed to investigate the influence of the post-transplantation period and marital status on the health-related QOL of patients with CKD who underwent kidney transplantation.

Methods and Results: A cross-sectional study was conducted among 78 patients who had received a kidney transplant from living related donors in the Republican Specialized Scientific and Practical Medical Center for Nephrology and Kidney Transplantation between January and April 2022. Kidney transplant recipients (KTRs) were divided into four groups depending on the time after kidney transplantation: 3, 6, 12 months, and 2 years or more after surgery. The study used 2 questionnaires. The first included questions about the sociodemographic data of patients; the second was the standardized health-related QOL questionnaire SF-36.

This study of the QOL of KTRs, residents of the Republic of Uzbekistan, showed an improvement in most scales of physical and mental health components 12 months and 2 years or more after kidney transplantation. On the scales of physical and mental health components, unmarried KTRs had a higher self-assessment of QOL than married KTRs, and among married KTRs, those with children had higher QOL indicators.

Conclusion: Clarifying how the time after kidney transplantation and individual sociodemographic and medical factors influence QOL indicators requires further research (including longitudinal studies) in a wider KTR population.**(International Journal of Biomedicine. 2024;14(1):36-40.)**

Keywords: chronic kidney disease • kidney transplantation • quality of life • Uzbekistan

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Abbreviations

CKD, chronic kidney disease; **KTRs**, kidney transplant recipients; **PF**, physical functioning; **PCS**, physical component summary; **QOL**, the quality of life; **RP**, role-physical functioning; **MCS**, mental component summary; **SF-36**, the 36-Item Short-Form Health Survey; **SF**, social functioning; **VT**, vitality.

Introduction

Currently, compared to program hemodialysis and peritoneal dialysis, kidney transplantation is considered to be the preferred method of renal replacement therapy in patients with end-stage chronic kidney disease (CKD) in terms of patient survival and improvement in their quality of life (QOL). In recent years, various researchers and international working groups have noted that the study of health-related QOL is an important tool for indirectly assessing the functioning of the transplant, as well as the effectiveness and quality of patient-centered care provided to kidney recipients.[1] In most international studies of QOL in kidney transplant recipients (KTRs), the universal health-related QOL questionnaire SF-36 was used.[2,3]

Several retrospective studies have reported an improvement in QOL over time on most scales in KTRs 1-5 years after kidney transplantation.[4] At the same time, a longitudinal study using data from the Korean Kidney Transplant Outcome Cohort Study reported a significant improvement in QOL measured by SF-36 in KTRs 2 years after kidney transplantation. However, a follow-up study in a larger cohort of KTRs demonstrated that although QOL showed improvement 2 years after kidney transplantation, it began to decline after 4 years of follow-up in the same cohort.[5] Thus, researchers have not come to a unified conclusion about QOL in patients with a transplanted kidney at various time periods after transplantation.

A number of researchers attempted to assess the QOL of the KTRs from the point of view of demographic and socio-economic aspects. The influence of gender, age, education, marital status, employment, and income level was studied.[6-8]

When studying the influence of marital status on self-assessment of QOL, Ryu et al.[5] concluded that married KTRs have better QOL scores than unmarried ones. At the same time, Junchotikul et al.[9] and Chisholm et al.[10] obtained the opposite result – family KTRs showed lower rates on QOL scales than did single patients.

Thus, the question of the influence of marital status on the QOL in people with a kidney transplant is still open since the findings of earlier studies contradict one another.

To date, it has been shown that the study of the QOL of KTRs using the SF-36 universal questionnaire is an important criterion for assessing the state of functioning of the kidney graft and the effectiveness of this type of renal replacement therapy.[1] At the same time, the ambiguity of researchers' opinions about the influence of certain sociodemographic factors, as well as the duration of the graft functioning on the assessment of the QOL of kidney recipients, indicates the need for further research in this direction.

This study aimed to investigate the influence of the post-transplantation period and marital status on the health-related QOL of patients with CKD who underwent kidney transplantation.

Materials and Methods

A cross-sectional study was conducted among 78 patients who had received a kidney transplant from living related donors in the Republican Specialized Scientific and Practical Medical Center for Nephrology and Kidney Transplantation between January and April 2022. The age of patients ranged from 18 to 60. KTRs were divided into four groups depending on the time after kidney transplantation: 3, 6, 12 months, and 2 years or more after surgery.

The study used 2 questionnaires. The first included questions about the sociodemographic data of patients; the second was the standardized health-related QOL questionnaire SF-36.

The following sociodemographic information and anthropometric data were obtained from the respondents: gender, age, height, weight, marital status, level of education, employment status, and residential area.

The QOL was evaluated using the 36-item Short Form Survey (SF-36) questionnaire.[11] The SF-36 contains eight domains: Physical functioning [PF (10 items)], Role physical [RP (4 items)], Bodily Pain [BP (2 items)], General Health [GH (5 items)], Vitality [VT (4 items)], Social functioning [SF (2 items)], Role emotional [RE (3 items)], and Mental Health [MH (5 items)]. These eight scales can be aggregated into two summary measures: the Physical Component Summary (PCS)and Mental Component Summary (MCS). The higher scores suggest a better assessment of one's health status, and the maximum score (100) indicates the predominance of positive statements and a very favorable assessment of one's health.

The survey was conducted online through Google Forms in Uzbek and Russian. QOL indicators were calculated and evaluated with the use of a specially developed computer program.

Results were statistically processed using Microsoft Excel 2019. For the descriptive analysis, results are presented as mean (M) ± standard deviation (SD). Inter-group comparisons were performed using Student's t-test. A probability value of $P<0.05$ was considered statistically significant.

Results

The sociodemographic characteristics of participants in the study are presented in Table 1: 95% of KTRs were young patients, 77% were men, and most of the KTRs were married and had children. The number of people with secondary education and who were unemployed among KTRs was higher than that of the highly educated and employed.

Table 1.

Patient characteristics (n=78).

Patients' characteristics	n (%)
Gender	
Male	60 (77.0)
Female	18 (23.1)
Age (years)	
Range	18-55
Mean ± SD	32.7 ± 7.3
Education	
Higher education	24 (30.7)
Secondary education	54 (69.3)
Employment status	
Employed	20 (25.6)
Not employed	58 (74.4)
Marital status	
Married	64 (82.1)
Not married	14 (17.9)
Children	
KTRs with children	54 (69.2)
KTRs without children	24 (30.8)

In our study, we found a clear trend toward an increase in QOL indicators over time after kidney transplantation (Figures 1 and 2): after 6 months, there was a slight increase in 2 scales (PF, RP) of the physical component of health, as well as an integrated indicator, PCS; after 12 months, there was an increase in QOL indicators on all 8 scales of physical and mental health components, of which a significant increase was noted on the PF, SF, RE, and PCS (P<0.05).

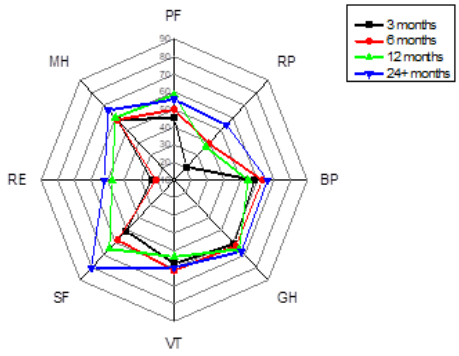

Fig. 1. *Items of SF-36 scales in the postoperative period.*

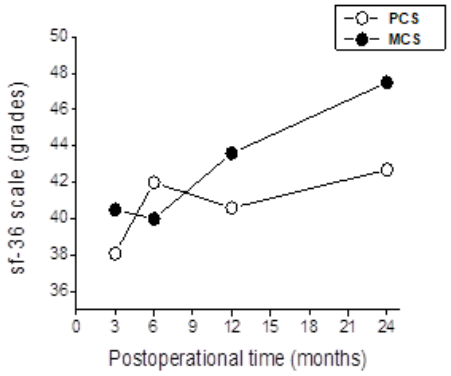

Fig. 2. *The Physical Component Summary (PCS) and Mental Component Summary (MCS) of the SF-36 in the postoperative period*

In the KTR group with a period of more than 2 years after transplantation, higher QOL indicators were found, while significant increases were noted on the RP (P<0.001), SF (P<*0.0001*), RE (P<0.05), PCS, and MCS (P<0.05).

KTRs were divided into groups based on their marital status: single, married, and with children. The study of the influence of marital status on QOL indicators showed a higher self-assessment of QOL on physical and mental health components scales in unmarried KTRs compared to married KTRs, with statistically significant improvements in 3 out of 8 scales (RP, GH, VT [P<0.05]), (Figure 3). Among married KTRs, QOL indicators were slightly higher in patients with children, than in patients who were married but did not have children (PF [P<0.05], BP [P<0.001], SF [P<0.0001]), (Figure 4).

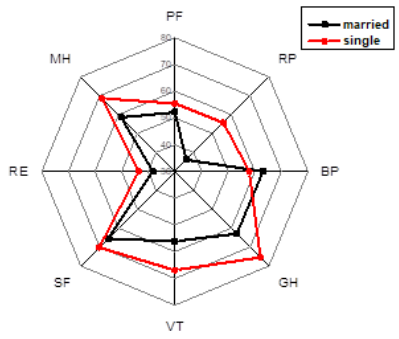

Fig. 3. *Indicators of QOL depending on marital status of KTRs.*

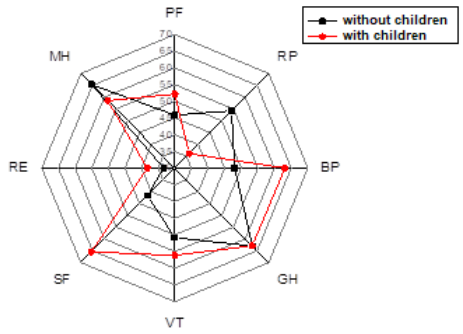

Fig. 4. *Indicators of QOL among married KTRs with and without children.*

Discussion

In general, our results align with the findings of earlier studies, although we found some differences that deserve discussion, mainly having to do with the period of assessment following surgery. Vu et al.[12] point to higher QOL in KTRs with extended postoperative periods. It should be noted that, according to most researchers, the most optimal assessment of QOL is observed in KTRs with a period after transplantation from 1 to 5 years. At the same time, some researchers indicate that a significant improvement in QOL in KTRs is observed 5, 10, or more years after kidney transplantation.[4]

To study the influence of the time factor on the formation of a subjective assessment of QOL indicators according to the SF-36 questionnaire, the KTRs who took part in the study were divided into four groups depending on the timing of kidney transplantation - with a period of 3, 6, 12 months and 2 years or more after the operation. Our analysis of this study showed a clear trend toward an increase in QOL indicators over time after kidney transplantation: after 6 months, there was a slight increase in 5 scales (PF, RP, BP, VT, SF) of physical and mental components of health, as well as PCS; after 12 months, there was an increase in QOL indicators on 6 scales of physical and mental components of health (a statistically significant increase on the SF and RE scales), and a statistically insignificant increase in the integrated indicators - PCS and MCS.

In the KTR group with a period of more than 2 years after transplantation, higher QOL indicators were found on all

scales, while significant increases were noted on 3 scales of the physical and mental components of health (RP, SF, RE) and integrated PCS and MCS. Our results are consistent with findings reported in the literature.

These results can be explained by the fact that patients need physical activity restrictions in the early stages after surgery, more frequent visits to medical institutions, and intensive immunosuppressive therapy. In addition, during this period, there is a risk of developing postoperative complications, as well as complications, including infectious ones, associated with taking immunosuppressive drugs. Within 1 to 5 years, the patient adapts and stabilizes, physical activity increases, and social contacts expand, which is obviously reflected in a higher subjective assessment of QOL.

When studying the influence of some sociodemographic factors on the QOL parameters of KTRs, our study found that the age and gender did not significantly affect the QOL. Regarding the influence of the level of education and employment on the self-assessment of QOL, patients with higher education and working people had higher scores on the SF-36 scale than did patients with secondary education and non-working people. The findings regarding the impact of education and employment on the QOL after kidney transplantation have been previously published.[13] Given the limited sample size, there is a need for further research on these issues.

We also studied the influence of marital status on the indicators of QOL for KTRs. Higher rates of QOL were found in young unmarried KTRs on the scales of GH, VT, and SF of the physical and mental health components, as well as PCS, and a slightly higher rate on other scales, compared with married kidney recipients. The results obtained are consistent with the research findings of Junchotikul et al.[9] and Chisholm et al.,[10] which indicated lower QOL rates in married KTRs. At the same time, our findings contradict the results of Ryu et al.,[5] who concluded that married KTRs have better indicators on the QOL scales than unmarried ones.

Among married KTRs, in our study, the QOL indicators are slightly higher for patients with children than for married KTRs without children. A higher self-assessment of the QOL in KTRs with children could be because they live in a complete family and have optimistic hopes and expectations associated with raising a child. This circumstance should be considered when organizing comprehensive medical and social assistance to families of KTRs wishing to have a child. Further research is needed to obtain more reliable results.

Thus, a number of sociodemographic, psychological, and medical factors take part in forming indicators of the QOL of KTRs. At the same time, according to the results of our study, with an increase in the period after kidney transplantation of more than 12 months, there is a noticeable improvement in the QOL parameters of physical and mental health components on most scales. Depending on marital status, the QOL indicators were somewhat higher in unmarried KTRs, and among married KTRs with children.

The legal framework for transplantology in the Republic of Uzbekistan was created in 2017, and the regulatory framework on this issue continues to improve. From 2017 to 2022, more than 700 kidney transplants from a living related donor have been performed in the country.

This study has some limitations. This is a cross-sectional study, which was conducted in one Republican Center for Nephrology and Kidney Transplantation and included a relatively small cohort of CKD patients who underwent donor kidney transplantation in the period 2018-2022. In this regard, the results of this study cannot be extended to the entire population of KTRs in Uzbekistan.

At the same time, a study of health-related QOL indicators among KTRs living in Uzbekistan has not been previously conducted. In this regard, we believe it is advisable to continue and expand research on the study of the QOL of KTRs for further clarification of the role and nature of the influence of sociodemographic and medical factors on its formation. The organization and conduct of longitudinal studies are of interest to assess the QOL in the population of KTRs at various periods (including long-term) after kidney transplantation.

Conclusion

This study of the QOL of KTRs, residents of the Republic of Uzbekistan, showed an improvement in most scales of physical and mental health components 12 months and 2 years or more after kidney transplantation. On the scales of physical and mental health components, unmarried KTRs had a higher self-assessment of QOL than married KTRs, and among married KTRs, those with children had higher QOL indicators. Clarifying how the time after kidney transplantation and individual sociodemographic and medical factors influence QOL indicators requires further research (including longitudinal studies) in a wider KTR population.

Ethical Considerations

The protocol of this study was approved by the ethical committee of the Ministry of Health of the Republic of Uzbekistan (No. 6/13-1696.2022) and carried out following the Helsinki Declaration of 1964. Informed consent was obtained from all KTRs who took part in the study.

Competing Interests

The authors declare that they have no competing interests.

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