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THE QUALITY OF LIFE OF PATIENTS WITH KIDNEY TRANSPLANTATION AND INVESTIGATION OF AFFECTING FACTORS IN IRAQ

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Advisor
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BY

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ACCEPTANCE AND APPROVAL

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ETHICS STATEMENT

The thesis entitled "The Quality of Life of Patients with Kidney Transplantation and Investigation of Affecting Factors in Iraq" was prepared and presented as a thesis and was written by myself and per the scientific, academic rules, and ethical conduct. The idea/hypothesis of my thesis solely belongs to my supervisor and me. The research on the view was conducted by myself; therefore, all of the used sentences and interpretations within the work belong to me.

I declare the issues mentioned above to be correct.

Signature

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Anas RAMAID MOHAMMED KARAGHOOL

ABSTRACT

THE QUALITY OF LIFE OF PATIENTS WITH KIDNEY TRANSPLANTATION AND INVESTIGATION OF AFFECTING FACTORS IN IRAQ

ANAS RAMAID MOHAMMED KARAGHOOL

Master of Science in Nursing

Advisor: Assoc. Prof. Figen EROL URSAVAŞ

June 2022

Introduction: The incidence of renal failure worldwide is increasing every year. The preferred treatment option for CKD patients is a kidney transplant. Iraq was one of the first Arab countries to establish a kidney transplant center. Despite that, the field of kidney transplantation (KT) has been affected by wars and economic blockades over the previous years. The quality of life of kidney transplant patients is affected by various factors and conditions. Data on KT and quality of life in the Iraqi literature are insufficient. **Aim:** This Study evaluates the quality of life of patients with kidney transplantation and the factors affecting it. **Methods:** The Study conducted cross-sectional and descriptive research, which includes 194 patients with KT who were recruited in Baghdad Teaching Hospitals for the period from December 15th, 2021, to April 15th, 2022. Data were collected with the patients' sociodemographic and clinical characteristics form and the World Health Organization Quality of Life Instrument, Short Form (WHOQOL-BREF). **Results:** Participants' age means 38.16 ± 11.9. 72.2% were male, and 69.6% were married; 52.1% were university graduates; 60.8% were working; 72.7% used triple therapy (Tacrolimus, Mycophenolate and Prednisone); 60% of the duration of KT was 1–5 years; 57.7% were non-relatives; the indication of KT was 26.8% renal atrophy. Sub-dimension mean scores of the quality of life scale; general quality of life was 6.89 ± 1.59, physical health was 22.2 ±3.85, psychological health was 20.4 ± 3.43, social relationships was 10.34 ± 2.48, environmental health was 29.31 ± 5.58. When the quality of life was compared with demographic and clinical characteristics: There were no significant differences in participants' quality-of-life dimensions based on the gender groups ($p > 0.05$). There were no significant differences in participants' quality-of-life measurements based on marital status groups ($p > 0.05$). When the relationship between the functional status of the patients and the sub-dimensions of the WHOQOL-BREF was examined, it was determined that there was a statistically significant difference in the sub-dimensions of the general quality of life, physical health, psychological health, social relations, and environment ($p < 0.05$). When the relationship between the level of education of the patients and the sub-dimensions of the WHOQOL-BREF was examined; It was determined that there was a statistically significant difference in the sub-dimensions of the general quality of life, physical health, psychological, social relations, and environment ($p < 0.05$). When the relationship between the receiving immunosuppressant of the patients and the sub-dimensions of the WHOQOL-BREF was examined; It was determined that there was

a statistically significant difference in the sub-dimensions of the general quality of life, physical health, psychological health, social relations, and environment ($p < 0.05$). When the relationship between the duration of KT of the patients and the sub-dimensions of the WHOQOL-BREF was examined, It was determined that there was a statistically significant difference in the sub-dimensions of the general quality of life, physical health, and social relations ($p < 0.05$). **Conclusions:** Most kidney transplant patients in Iraq have a moderate quality of life. No significant differences was found between quality of life and the gender, relatives group, and marital status of the participants. A statistically significant difference was found between quality of life and participants who have been working, university graduates, taking triple therapy (Tacrolimus, Mycophenolate and Prednisone), and who have been transplanted for more than five years.

Keywords: Kidney Transplantation, Nursing, Quality of Life.

ÖZET

IRAK'TA BÖBREK TRANSPLANTASYONU OLAN HASTALARIN YAŞAM KALİTESİ VE ETKİLEYEN FAKTÖRLERİN İNCELENMESİ

ANAS RAMAID MOHAMMED KARAGHOOL

Hemşirelik, Yüksek Lisans

Tez Danışmanı: Doç. Dr. Figen EROL URSAVAŞ

Haziran 2022

Giriş: Dünyada böbrek yetmezliği insidansı her yıl artmaktadır. Kronik böbrek yetmezliği için tercih edilen tedavi seçeneği böbrek transplantasyonudur. Irak, böbrek transplantasyonu merkezi kuran ilk Arap ülkelerinden biridir. Buna rağmen böbrek transplantasyonu alanı geçmiş yıllarda yaşanan savaşlardan ve ekonomik ablukadan etkilenmiştir. Böbrek transplantasyonu hastalarının yaşam kalitesi çeşitli faktör ve koşullardan etkilenmektedir. Irak literatüründe böbrek transplantasyonu ve yaşam kalitesine ilişkin veriler yetersizdir. **Amaç:** Bu araştırma böbrek transplantasyonu olan hastaların yaşam kalitesini ve etkileyen faktörleri değerlendirmeyi amaçlamaktadır. **Yöntem:** Araştırma 15 Aralık 2021 - 15 Nisan 2022 tarihleri arasında Bağdat Eğitim Hastanesindeki örneklem kriterlerini karşılayan 194 böbrek transplantasyonu hastası ile yapılmıştır. Tanımlayıcı ve kesitsel bir çalışmadır. Veriler hasta sosyodemografik ve klinik özellikler formu ve Dünya Sağlık Örgütü Yaşam Kalitesi Ölçeğinin kısa formu ile toplanmıştır. **Bulgular:** Katılımcıların yaş ortalaması 38.16 ± 11.9, % 72.2'si erkek, % 69.6'sı evli, % 52.1'i üniversite mezunu, % 60.8'i çalışıyor, % 72.7'si üçlü tedavi (Tacrolimus, Mycophenolate and Prednisone) kullanmaktadır. Böbrek nakil süresinin %60'ı 1-5 yıl, % 57.7'si yabancı birisinden nakil olmuş, böbrek nakil endikasyonu ise % 26.8 böbrek atrofisiydi. Yaşam kalitesi ölçeğinin alt boyut puan ortalamaları; Genel yaşam kalitesi 6.89 ± 1.59, fiziksel sağlık 22.2 ±3.85, psikolojik sağlık 20.4 ± 3.43, sosyal ilişkiler 10.34 ± 2.48, çevre sağlığı 29.31 ± 5.58 olarak saptanmıştır. Yaşam kalitesi ile demografik ve klinik özellikler karşılaştırıldığında: Cinsiyet gruplarına göre katılımcıların yaşam kalitesi boyutlarında anlamlı bir farklılık yoktu ($p > 0.05$). Medeni durum gruplarına göre katılımcıların yaşam kalitesi boyutlarında anlamlı bir farklılık yoktu ($p > 0.05$). Hastaların çalışma durumu ile yaşam kalitesi ölçeğinin alt boyutları arasındaki ilişki incelendiğinde; Genel yaşam kalitesi, fiziksel sağlık, psikolojik sağlık, sosyal ilişkiler ve çevre alt boyutlarında istatistiksel olarak anlamlı farklılık olduğu belirlendi ($p < 0.05$). Hastaların eğitim düzeyi ile yaşam kalitesi ölçeğinin alt boyutları arasındaki ilişki incelendiğinde; Genel yaşam kalitesi, fiziksel sağlık, psikolojik, sosyal ilişkiler ve çevre alt boyutlarında istatistiksel olarak anlamlı farklılık olduğu belirlendi ($p < 0.05$). Hastaların immünosupresan alması ile yaşam kalitesi ölçeğinin alt boyutları arasındaki ilişki incelendiğinde; Genel yaşam kalitesi, fiziksel sağlık, psikolojik sağlık, sosyal ilişkiler ve çevre alt boyutlarında istatistiksel olarak anlamlı farklılık olduğu belirlendi ($p < 0.05$). Hastaların böbrek nakli süresi

ile yaşam kalitesi ölçeğinin alt boyutları arasındaki ilişki incelendiğinde; Genel yaşam kalitesi, fiziksel sağlık ve sosyal ilişkiler alt boyutlarında istatistiksel olarak anlamlı farklılık olduğu belirlendi ($p < 0.05$).

Sonuç: Irak'taki böbrek transplantasyonu hastalarının çoğu orta düzeyde bir yaşam kalitesine sahip olup katılımcıların yaşam kalitesi ile cinsiyet, akrabalık ve medeni durumları arasında anlamlı bir ilişki bulunamamıştır. Yaşam kalitesi ile çalışmakta olan katılımcılar, üniversite mezunları, üçlü tedavi (Tacrolimus, Mycophenolate and Prednisone) alan ve beş yıldan uzun süredir nakledilen katılımcılar arasında anlamlı bir ilişki bulunmaktadır.

Anahtar Kelimeler: Böbrek Transplantasyonu, Hemşirelik, Yaşam Kalitesi.

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ANAS RAMAID MOHAMMED KARAGHOOL

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LIST OF ABBREVIATIONS

CKD	Chronic kidney disease
ESRD	End-stage renal disease
KT	Kidney transplantation
KTR	Kidney transplant recipients
QOL	Quality of life
RRT	Renal replacement therapy

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1. INTRODUCTION

Chronic Kidney Disease (CKD) refers to a problem in the function or structure of the kidneys that persists for three months or longer (Benjamin & Lappin, 2021; So et al., 2018). The disease is chronic when it has the renal "glomerular filtration rate is less than 60 mL/min/1.73 m^2" (Benjamin & Lappin, 2021; So et al., 2018), or there is albumin in the urine (Chen et al., 2019). Patients with chronic renal failure experience progressive loss of function and require renal replacement therapy (RRT) (Dawoud et al., 2021).

CKD is a widespread medical problem (Imomjonovich & Amirkulovna, 2021), affects the health and economy of the citizen, and may lead to death (Alhajim, 2017; Ismael & Rashid, 2020). Also, the statistics of infection with the disease have gradually increased so that approximately 8–16% of the population in the world suffers from some form of the disease (Chen et al., 2019; Joshi et al., 2017; So et al., 2018). Iraq has a 74-per-million population prevalence of End-stage renal disease (ESRD) (Abdullah & Hassoun, 2021).

A person's self-perception of his place in the world about the values and traditions of the society in which they live, as well as his expectations, objectives, interests, and standards of living, are all included in the World Health Organization definition of quality of life (QOL). People's lives are affected by a variety of things, including their mental health, their opinions about the world, and their level of personal freedom (Achigbu et al., 2022).

KT is the preferred option and is gold-approved for treating individuals in the latter stages of kidney failure. That is because it is less expensive than dialysis, provides a better QOL, and yields better outcomes in the long term. The positive impact reflects on the patient's life and affects his family (Alomar, 2021; Imomjonovich & Amirkulovna, 2021; Wang & Hart, 2021).

All kidney transplant recipients (KTR) must take life-long immunosuppressive medication because it reduces the risk of graft rejection (Dweib et al., 2020). The immunosuppressants commonly used in Iraq are tacrolimus and

cyclosporine (Mahmood et al., 2020). A person's appearance has an essential impact on the level of personal relationships. Medications can cause many physical effects on a patient's appearance, such as weight gain, acne, hand tremors, hirsutism, and skin disorders, causing low self-esteem and thus may lead to social isolation and decreased sexual function. Additionally, the new KTR may suffer from chronic diseases and the inability to return directly to work, all of which may affect KTR's well-being (Noppakun et al., 2022). KTR's thinking about the consequences of KT makes him under psychological pressure and fear of rejection. Psychological disorders have been shown to have a big effect on the quality of life, so the KTR needs to be evaluated from a psychological point of view (De Pasquale et al., 2020). There aren't just mental disorders that can happen after KT; there are also physical problems. Studies have shown that psychological, social, and environmental factors together with immunosuppressive treatment directly affect physical activity. Inactivity in KTR may be associated with lower QOL (Takahashi et al., 2018). The Coronavirus disease 2019 (COVID-19) outbreak presents a new hurdle to the KT program in the world as it generated psychological anxiety and stress among KTR due to their fear of infection and death resulting from receiving immunosuppressive drugs, which negatively affected their QOL (Wilkinson et al., 2021).

In Iraq, researchers studied the QOL of dialysis patients with CKD. As a result of the poor QOL experienced by dialysis patients, all studies concluded that additional kidney replacement procedures, such as KT, are required (Alhajim, 2017). In contrast, data on Iraqi KTR's QOL is scarce (Sulaiman and Kadhim, 2019). Iraq was one of the first Arab countries to start KT. The field of KT in Iraq was greatly affected by the wars and the siege before 2003. Currently, two centers are working irregularly due to the unstable Iraqi situation (Al Sayyari, 2008). KT began, and it was the first operation in Iraq in 1973, precisely at Al-Rashid Military Hospital. In 1985 (Al-Azzawi et al., 2019). Approximately 250 KT was carried out between January 2009 and January 2014 at the Medical City in Baghdad (Ali, 2021). According to the organ surgery records at the Department for Kidney Diseases and Organ Transplants (Medical City, Baghdad), 42 KT were performed in 2019, while KT was stopped from the second to the fifth month of 2020 due to the COVID-19 pandemic. As the number of people eligible for surgical treatment has risen, the rate of operations has also climbed dramatically (Alomar, 2021).

In Iraq, KT data are still few and weak (Ali et al., 2016). COVID-19's effect on KTR remains unknown (Gandolfini et al., 2020). When it comes to COVID-19 and KTR, there is a dearth of information (Coates et al., 2020). Improved data gathering will lead to more accurate estimations of organ quality, allowing for more suitable organ distribution and possibly reducing the number of organs discarded (Cooper et al., 2018). A poorer standard of living is experienced due to decreased physical activity and diminished physical ability following a KT (Klaassen et al., 2017). Non-adherence may be caused by a combination of variables, including the patient, the ailment, the therapy, the healthcare system, and even the patient's socioeconomic status (Nerini et al., 2016). During the last decade, clinical KT research has come to a grinding halt, with little progress being achieved due to the lack of attention from industries, funding agencies, care services payers, and healthcare providers (Viklicky et al., 2020).

KT is a high-risk medical procedure with related dangers beyond the surgery itself. Due partly to non-adherence to treatment and alterations in immunologic and stress responses, poor post-KT outcomes have been related to underlying mental health issues (Virmani & Asch, 2020). Advances in surgical techniques and immunosuppressive therapies have improved KT outcomes (Abhinav Humar & Sturdevant, 2015). However, KTR must take life-long treatment to preserve the graft, and medicine has many side effects (Nerini et al., 2016).

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During the last decade, clinical KT research has come to a grinding halt, with little progress being achieved due to the lack of attention from industries, funding agencies, care services payers, and healthcare providers (Viklicky et al., 2020).

QOL and life expectancy may be improved and extended in patients with renal insufficiency who get a KT, with the relative degree of improvement rising with time. No matter how old the patient is or whether they have other medical conditions, this effect is still evident. There are several considerations before deciding whether to proceed with a KT (Virmani & Asch, 2020). Some studies have found negative emotions following KT, mainly when a donor is a living person (Nerini et al., 2016).

KT is still the only viable alternative for patients with the advanced renal illness. A participant's wellness QOL may be adversely affected even after a successful KT because of the original disease's long-term repercussions. Furthermore, the immunosuppressive treatment itself, as well as the drug's side effects, have an impact on patients, producing stress (Bek & Cengiz, 2020). The neurocognitive health of KTR should be assessed both before and after KT since immunosuppressive drugs are known to induce neurocognitive decline over time (Virmani & Asch, 2020).

The QOL has been shown in research to influence one's level of happiness in life (Tarkar, 2021). Various circumstances control a person's QOL, including their socioeconomic status, marital status, age, gender, and the adverse effects of immunosuppressive medications (Antunes et al., 2018). Ismael and Rashid say that in Iraq, descriptive studies of KTR are needed to get a better picture of how their lives are affected by their KT conditions and individual traits. This will help them live better lives (Ismael & Rashid, 2019). KTRs must evaluate their general health and well-being to measure nursing interventions. The nurse's role is vital in preventing kidney failure and having to re-KT the kidneys, especially for less literate patients. Health education, therapeutic adherence, and psychological factors are essential for the success of a KT, and they are all nursing interventions. It is necessary to measure the factors that affect the quality of life and establish reliable data (Antunes et al., 2018).

Many international studies have indicated that KTR have a fair QOL in Turkey, America, Thailand, Spain, and Palestine (Dew et al., 1997; Doğan & Candan

Dönmez, 2019; Dweib et al., 2020; Junchotikul et al., 2015; Rebollo et al., 2000); while the QOL was low in Egypt and Iran (El Rasheed et al., 2020; Rostami et al., 2011).

1.1 The objective of the Study

Evaluate the QOL for patients with kidney transplantation and affecting factors in Baghdad teaching hospitals (Medical City).

2. GENERAL INFORMATION

2.1 Chronic Kidney Disease

CKD would be a widespread condition, given the presence of chronic diseases in adults such as high blood pressure and diabetes mellitus (Kalantar-Zadeh et al., 2021). There is no definitive cure for this disease as all treatments have short-term effectiveness (Benjamin & Lappin, 2021). Patients with CKD seem more prone than the broader public to getting pneumonia, which can lead to infection with COVID-19 and even death (Henry & Lippi, 2020). CKD does not progress predictably. If the disease is advanced and the patient has not undergone dialysis, the median survival will be 16 to 21 months (So et al., 2018). In people with CKD, ESRD is the most advanced kind, requiring renal replacement treatment to survive because the kidneys are no longer functioning (CEA, 2021). When CKD reaches its most severe state, acute bouts of renal injury or other contributing events may obscure the illness's course (Kalantar-Zadeh et al., 2021).

As CKD progresses, symptoms such as proteinuria and kidney function abnormalities become more prevalent, especially if they last for three months or more (Benjamin & Lappin, 2021; So et al., 2018). CKD is usually identified during routine examinations such as a serum chemistry profile or urine test. Some patients may develop nocturia, oliguria, hematuria, or flank pain. If CKD is in its advanced stages, the patient may complain of weight loss, lack of appetite, shortness of breath, nausea, or fatigue (Chen et al., 2019). If the duration of the disease is unknown, multiple evaluations are performed to diagnose the condition and determine whether it is an acute kidney injury or CKD. Kidney function changes between two to seven days in acute kidney injury and three months in CKD. The patient's clinical history, urine test results, and physical examination are used (CEA, 2021; Chen et al., 2019).

Once the patient is diagnosed with ESRD, many procedures will be required to preserve their health and life. There will be many more dialysis treatments since the last stage is known to increase mortality and morbidity while also increasing the

financial burden on the healthcare system. At this stage, complications will be divided into two groups: one caused by kidney disease in the last scene, and the other caused by vascular access and dialysis. The lucky patients will be eligible for KT (Benjamin & Lappin, 2021). A high percentage of CKD patients have comorbidities besides the original disease, causing a more significant health and economic burden than patients without CKD. In Iraq, the rate of medical comorbidity increased as the rate of high blood pressure (35.2%) and heart disease (10.56%) increased, in addition to heart failure and cerebrovascular accidents (Abdullah & Hassoun, 2021). CKD is a condition that develops over time into an incurable disease and is still an important reason for the low QOL and early deaths; in the United States of America alone, the disease affects nearly 500,000 people (Benjamin & Lappin, 2021). Worldwide, the prevalence of CKD varies among adults; an estimated 843 million people are involved (Kovesdy, 2022). With 15% in the United States (CDC, 2021). Australia had 5.8%, Poland had 5.2%, Spain had 4.0%, Canada had 3.1%, Finland had 2.4%, Germany had 2.3%, and China had 1.7% (Romagnani et al., 2017). It has been shown that individuals with ESRD are less satisfied with their functional ability, family members and friends, mental and social functioning, and overall QOL than the general population (Ismael & Rashid, 2020). Another study found that the economic burden is worse in developing countries, hurting the QOL (Alhajim, 2017).

2.2 Economic Impacts and Treatments of Chronic Kidney Disease

2.2.1. Economic impacts

Iraq has a 2019 gross domestic product per capita of US $5,740, making it an upper-middle-income country. Over two years, the poverty rate jumped from 19% to 23%, and in some southern areas, it has risen to 70%. The population in Iraq has more than doubled since 1960, rising from 7 million people to a projected 41 million people by the year 2021 (Hossain et al., 2022). ESRD and CKD place a significant financial and healthcare burden on patients (Benjamin & Lappin, 2021; CEA, 2021). Most people with CKD reside in countries with poor or moderate incomes, including Iraq (Abdullah & Hassoun, 2021; Chen et al., 2019; Ismael & Rashid, 2020). CKD epidemiology in nations with low and medium incomes lacks clarity due to a scarcity of community research, inconsistency in measuring kidney function, and the use of

procedures that aren't standard or calibrated in the field (Alhajim, 2017; Romagnani et al., 2017).

2.2.2. Treatments

Renal failure damages the kidneys in the long run, making them unable to filter the blood as effectively as healthy kidneys. Hypertension, cardiovascular disease, stroke, and early mortality can all result from toxic waste and excess fluid accumulating in the body due to kidney failure (CDC, 2021).

ESRD is a progressive condition that requires prompt RRT to avoid mortality. The state is linked to several hospitalizations and several metabolic abnormalities. More people die from ESRD than people who do not have it. Between 20% and 50% of patients fail in the first 24 months, even when receiving timely dialysis. Hyperkalemia is the most prevalent cause of mortality, followed closely by unfavorable cardiac events as the second most frequent reason (Benjamin & Lappin, 2021).

If a patient's CKD has progressed, organ transplantation and long-term dialysis are options. The preferred treatment is KT due to the lower risk of adverse effects and the higher level of well-being it provides (Alomar, 2021; Benjamin & Lappin, 2021; CEA, 2021). Within six months of being diagnosed with stage 5 or fourth stage CKD, a KT should be considered for patients who are expected to require RRT (Thiruchelvam et al., 2011). More than 2 million people have received RRT treatment around the world. RRT is a long-term treatment with various side effects for the patient, including partial cure and the possibility of lifelong therapy. As a result, interdisciplinary strategies are increasingly important to improve the efficacy of these interventions while minimizing their influence on RRT patients' QOL. Modern treatment can help control ESRD symptoms to some extent, but it cannot prevent the health status or QOL from deteriorating (Czyżewski et al., 2014).

2.3 Indications and Contraindications for Kidney Transplant

Indications for RT include any condition that leads to ESRD, such as blood pressure, diabetes, and chemical nephrotoxicity (UNC, 2022). KT may be more dangerous than dialysis for some people with CKD, and cases that are not eligible for transplant include the following:

Heart diseases that cannot be treated, such as severe weakness of the heart muscle or severe blockage in the heart arteries, a bacterial or viral infection until it is treated. The patient who has been cured of cancer needs to wait for a period to be decided by the transplant doctor due to the risk of the disease returning after transplantation as a result of immunodeficiency, psychological and mental illness that is difficult to treat and control, drug addiction. Furthermore, some immune disorders can cause transplanted kidneys to fail (MOH, 2022).

2.4 Organ Donation

End-stage organ failure used to be synonymous with certain death and long-term pain about 50 years ago. Donation and KT have become a feasible alternative for those in need thanks to recent improvements in surgical methods, immunology, and cell genetics. Despite this, the need for organ transplantation is growing (Al-Abbasi & Al-Jasim, 2020). Many political and economic changes in the Middle East have contributed to the revitalization of the black market, in addition to social and religious indicators (Ali, 2015). This restricted KT to living donors compatible with blood type (Ali, 2021). A lack of support from politicians and health officials has made living donations the only choice for KT despite current laws, Iraq, and some Arab and Islamic states (Ali, 2021). Iraqi legislation in the 1980s and 1990s did not promote the prevention of human trafficking. Human trafficking (the sale of organs) was also active due to economic and political concerns and the wars waged in Iraq. However, authoritarian rules and instructions were enacted in 2016, limiting this issue (Ali, 2021). To combat organ trafficking, the Iraqi Ministry of Health has established a high-level group (it is to prevent circumvention of the law). To verify the donor's eligibility and whether or not to undertake the transplant, societal, economic, psychological, and other criteria have been developed (Rifat, 2006). A potential kidney transplant recipient (KTR) is typically referred to a transplant facility for evaluation by a general nephrologist. Physicians will understand allograft

and patient outcomes following KT in this edition of the Core Curriculum in Nephrology (Virmani & Asch, 2020).

It is possible to receive an organ transplant from a deceased or a living donor. To avoid rejection, every organ donor must be compatible with the recipient's blood type and immunology. The donor must have two to maintain a healthy lifestyle after giving one of the donor's kidneys. It is possible to improve both the KTR and the donor's health by using living donor transplants, which have a higher success rate due to enhanced immunologic compatibility between donors and KTR. Living-donor KT has been more cost-effective than traditional KT due to the allograft's long-term survival and the elimination of dialysis (Alomar, 2021; Axelrod et al., 2018; CEA, 2021).

The vast majority of people who donate their organs do it to benefit a particular person (CEA, 2021). The disparity between the number of patients on waiting lists and the number of organs available is widening worldwide, particularly in Iraq (Al-Abbasi & Al-Jasim, 2020). Not everyone who would benefit from organ donation has a family member or acquaintance who is a good match. Living donors seldom donate to strangers for no reason other than generosity. KT is a significant procedure well-known to both potential living donors and KTR. Because of the potential dangers associated with donating a kidney, living donors must weigh their desire to help others in need against their desire to avoid a higher chance of long-term renal failure (CEA, 2021).

According to history, the first successful KTR was conducted in 1954. To achieve the best results, the live donor procedure and immunosuppressive drugs have advanced significantly since then. Seventy-five percent of all KT use a live donor, with survival times ranging from ten to twenty years. RRT is only administered to half of the world's ESRD patients, and the other half dies. In Asia, around a third of patients who needed RRT was fortunate enough to receive it (Alomar, 2021).

The advantages of a laparoscopic surgical method for a live donor transplant include less morbidity, minimal bleeding, reduced analgesic use, quick postoperative recovery, and better cosmetic results. KT surgery is difficult for surgeons worldwide due to the wide range of anatomical variations across various ethnicities. These differences can lead to a variety of vascular and urological postoperative problems. The existence of numerous renal arteries is a significant anatomical variance reported

in live donor KT. Around 18–25.1 percent of donors have multiple lanes and veins. Unfortunately, we do not yet have laparoscopic surgery in Iraq (Alomar, 2021).

In the realm of KT, tremendous progress has been made in recent decades. That was made possible by advancements in donor kidney collection techniques, careful donor selection, and resolving several technical issues related to KT (Imomjonovich & Amirkulovna, 2021). The number of actual donors (live) for KT has been stable over the past decade (Thiruchelvam et al., 2011). These issues concern society, culture, the economy, and the political system (Tarkar, 2021). In the UK, one in three KT now comes from a live donor, thanks partly to increased KT from living donors during the past decade (Thiruchelvam et al., 2011). Due to a scarcity of kidney donors (Kalantar-Zadeh et al., 2021). Live donor KT is increasingly needed in Iraq because of a rising incidence of ESRD. KT is directly proportional to the number of patients with renal problems performed each year. People with chronic renal disease are prospective KTRs (Alomar, 2021; Czyżewski et al., 2014).

2.5 Importance of Kidney Transplant

KT best serves ESRD patients, which is the standard gold treatment. This is because it is less expensive than dialysis, provides a better standard of living, and yields better long-term impacts. The favorable effects extend beyond the patient's life to include his family members (Alomar, 2021; Imomjonovich & Amirkulovna, 2021; Wang & Hart, 2021). In Iraq, more than 40% of ESRD patients can undergo KT, a percentage that exceeds many developed countries (see Figure 1).

Restoring a patient's mental and physical health and well-being and enhancing their standard of living are the primary goals of KT. Following a KT, returning to work is a significant health condition (De Pasquale et al., 2019). KTRs are 68% less likely to die than dialysis patients waiting for a KT. All patients, even the elderly and diabetics, can take advantage of this life-extending benefit after a KT (CEA, 2021; Dweib et al., 2020). KT provides the most comprehensive social rehabilitation, as evidenced by a considerable enhancement of the recipient's standard of living and an increased ability to work in a small space following the procedure (Imomjonovich & Amirkulovna, 2021). Almost all KT facilities now record survival rates in the first year of post-KT, surpassing 95% for all KTR (Imomjonovich &

Amirkulovna, 2021; Poggio et al., 2021; Viklicky et al., 2020). According to the most available data (Ali et al., 2016), 94.4 percent of Iraqi KT (operation) successes lived to be one year old. Although KT has become the most excellent option, especially in comparison to hemodialysis in terms of longevity, patient QOL, and expenditure, there is no definitive treatment for patients in the latter stages of renal illness (Nerini et al., 2016).

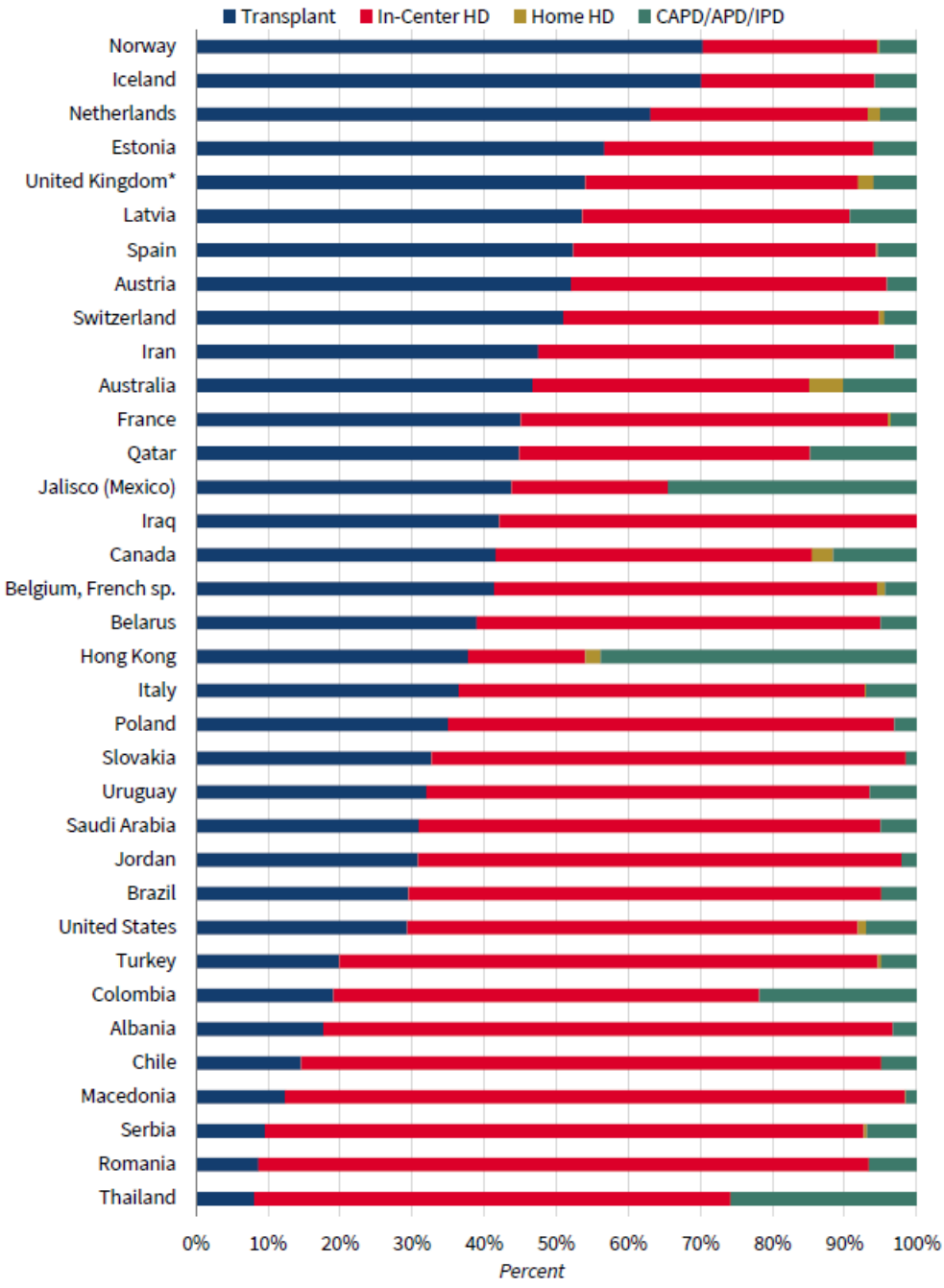

Figure 1: Distribution of RRT Modalities Used by ESRD Patients by Selected Country in 2016 (CEA, 2021).

2.6 Kidney Transplant

A human kidney from a deceased or living donor is surgically placed into an ESRD patient to restore renal function (Ismael & Rashid, 2019). The compatibility of tissues acquired for the Human Leukocyte Antigen type is required for KT (Mendonça et al., 2014). Regarding outcomes like survival, morbidity, and cost, RRT using KT is the best option. KT has also been proven to have an even more significant impact on QOL related to health than other RRT (Alhajim, 2017; Dweib et al., 2020). Dialysis patients are less accessible, less active in social activities, and less capable of working than those who have undergone a KT. How well a person's experiences in life fit their needs and desires is called quality of life, or QOL. Dweib et al. (2020) say that the QOL of patients has become an essential measure of health for treatment programs.

Most postoperative care is the same for everyone else, regardless of the procedure. Medical staff in the hospital often evaluate fluid balance and vital signs like heart rate or blood pressure. Immune suppressants and screening for post-KT medical or surgical problems are among the unique challenges faced by patients undergoing organ KT. A kidney embolism, urine leakage, or kidney stricture can occur during surgery in patients who have had a KT. These advances have included surgical procedures, immunosuppression, anti-rejection therapy, organ retrieval techniques, postoperative care, and the treatment of post-KT infection concerns. There is a significant survival benefit for people who undergo organ transfer from a living individual compared to those who get organs from a deceased individual over five years (Abhinav Humar & Sturdevant, 2015). Almost all KT facilities now record survival rates in the first year post-KT, surpassing 95% for all KTR (Abhinav Humar & Sturdevant, 2015). It is common practice in Iraqi live donor RRT to do a surgical intervention with lumpectomy, which has its complications (Alomar, 2021). Lack of preventive medicine, poor infrastructure, a lack of government assistance, a widespread societal culture of organ donation and KT, and qualified staff with no health insurance paying the costs are all frequent elements of KT in Middle Eastern countries (Ali, 2015).

From 1 per 1,000 people in Bangladesh to 60 per 1,000 people in Jalisco, Mexico, the rate of KT varies widely. Asia has a substantially lower rate of KT than several European nations. Performing a KT is impossible due to a lack of health care

infrastructure and cultural and socioeconomic issues (Romagnani et al., 2017). More KT is becoming necessary with an increasing number of Iraqis suffering from ESRD. However, the country's national KT program confronts significant problems, including a lack of donor awareness and a paucity of live donors (Alomar, 2021).

KT restores all renal functions (i.e., regulation, excretion, metabolic, and endocrine); nonetheless, the patient's immune system can be chronically inhibited. It is argued that dialysis only allows for partial or intermittent elimination, but KT is a quantitatively superior procedure. However, it is not risk-free. According to Ismael & Rashid (2019), KT can cause significant changes in every aspect of one's QOL, and KTR must adjust to these changes. They will have more time to meet new people because they will no longer need to undergo time-consuming dialysis and be able to return to work. Given the unique personal features and KT conditions, the QOL among KTR can vary greatly (Ismael & Rashid, 2019). A KTR should expect to be in the hospital for about 6-7 days (range 4–7). Depending on the facility, patients are followed up by transplant surgeons, nephrologists, clinical pharmacists, and social workers after they are discharged from the hospital (Wang & Hart, 2021). After a kidney transplant, patients may experience digestive problems (Bulbuloglu et al., 2022), the side effects associated with lifelong kidney transplant treatments (Reis et al., 2022), and chronic blood diseases (Malyszko et al., 2020). Hypertension is a common condition suffered by KTR (Yunanto et al., 2022); in addition to diabetes mellitus that occurs after kidney transplantation (Montero et al., 2021). Agrawal says one of the main problems faced by KTR is infections. Usually, infection is a health problem during the first year after KT, and the first month represents the most dangerous stage (Agrawal et al., 2021).

2.6.1. Treatment costs

Any method of dialysis costs more per year than KT. One year after a KT, most of its expenses can be expected to be paid for. KT is significantly less expensive than dialysis in the long run because immunosuppressive medicines and ongoing medical care are included in the price (CEA, 2021). In 2020, the cost of a KT was $442,500 on average. As a result, the KT admission costs 34 percent of the entire treatment cost. Only 7% of the total cost of KT is spent on immunosuppressive and transplant-related drugs, such as preventive antibiotics (usually six months after KT) (Wang & Hart, 2021). According to a recent UK estimate, per patient with end-

stage renal failure, KT saves £25 000 (€29 000; $40 000) per year (Thiruchelvam et al., 2011).

2.6.2. Undesirable effects and rejection

All KTRs must take immunosuppressive medications to prevent their immunity from rejecting the transplanted organ (Dweib et al., 2020; Nerini et al., 2016). Patients' QOL has improved due to using more vital immunosuppressive medicines, which have improved transplant survival, reduced cardiovascular problems, and reduced side effects. Immunosuppressive medication must be followed to avoid graft rejection, which increases hospitalizations and healthcare costs. Socioeconomic and cultural issues influence treatment and therapy decisions; therefore, knowing patients' QOL has a significant impact (Dweib et al., 2020). Although steroid-free immunosuppressive regimens are used by a quarter of patients, this percentage has remained unchanged over the last decade (Wang & Hart, 2021). In Iraq, cyclosporine and tacrolimus are the most commonly used maintenance immunosuppressive medicines, with tacrolimus-based regimens becoming increasingly popular over the last 15 years (Mahmood et al., 2020).

To retain their ability for personal fulfillment, these patients require constant nursing care from pre-transplant to post-transplant. For patients who have undergone KT, the graft's ability to function immediately raises personal, family, and social expectations. Nonetheless, there may be specific hazards, worries, and reliance on pharmaceutical treatments and a significant social and economic impact. Patients unable to work may experience changes in interpersonal relationships due to their necessity to take immunosuppressive medicine. Finally, patients may be concerned about the transplanted organ's long-term viability. The permanent chemical immunosuppression that follows is also linked to a high morbidity rate (Abhinav Humar & Sturdevant, 2015; Antunes et al., 2018).

Surgical problems after KT range from 5% to 25%; the most common complications are urinary, vascular, or wound-related (Carvalho et al., 2019). In addition to complications such as thrombosis of the renal arteries or veins, ureteral leak, and ureteral stricture can arise (Abhinav Humar & Sturdevant, 2015). As surgical procedures have improved, surgical problems after a KT have decreased. Surgical complications are reported to be low (5–10%) compared to liver and pancreatic transplants (Thiruchelvam et al., 2011).

About 20 percent of KTR experience acute rejection episodes, either lymphocytes or antibodies, which can be life-threatening (Cardinal et al., 2018; CEA, 2021). When a patient experiences an acute rejection event, the graft's micro- and microvasculature and endothelium can be damaged, reducing graft performance and survival. Even though different definitions are used there are patients who need hemodialysis during the first week following KT or who have blood creatinine levels that do not fall by more than 10% in the three days after KT (Cardinal et al., 2018).

2.6.3. Quality of life

In the 1980s, the term "quality of life (QOL)" was already used in clinical studies (Ismael & Rashid, 2019). The WHO defines QOL as how a person sees their place in the world about the values and culture in which they live, as well as all that goes along with their aspirations, objectives, hobbies, and living standards. A person's life is affected by multiple factors such as the status of one's mental health, as well as one's beliefs, environment, social ties, psychological state, and degree of personal independence (Achigbu et al., 2022). A person's QOL was by the environment's ability to satisfy a person's wants and desires in which they live (Dweib et al., 2020).

They are meeting the needs of self-realization and expression through work. Developing one's professional and social identity is impossible without it. Because work has always been a part of people's daily lives, they have the opportunity to develop self-determination and social cohesion. One of the most critical health markers is the capacity to return to work despite having a chronic renal condition. Research reveals that working following a kidney transplant (KT) improves a patient's QOL and extends their life expectancy. After a KT, the number of people who remain in their homes varies significantly from nation to nation, ranging from 28% to 58% (De Pasquale et al., 2019). Most kidney KTRs want to return to normalcy and participate in "full-life" activities, such as work and community life. As a result of employment's salutogenic benefits, returning to work improves QOL and emotional and mental health in such individuals (Jordakieva et al., 2020).

According to a recent Swedish study, KTR had a 21% higher chance of employment one year after KTR than dialysis patients. After five years, this effect expanded to 38 % points due to decreased outcomes and conditions on dialysis.

Dialysis does not compare well with KT regarding reducing costs, extending life expectancy, enhancing QOL, or boosting productivity. Annual costs are the sole difference between the two dialysis techniques (CEA, 2021). Social rehabilitation is best provided through KT, as demonstrated by the recipient's improved QOL and enhanced ability to work within a short period following the treatment (Imomjonovich & Amirkulovna, 2021). The overall employment rate for patients with a functioning KT was about 40%, with about 30% returning to work full-time following the KT. Despite this, research reveals that the work situation of KTR varies greatly (Jordakieva et al., 2020).

A Korean study indicated that many factors may affect the QOL of patients after KT. It is known that patients are affected by psychological and social factors. In addition to the side effects of immunosuppressive therapies, it is important to measure the factors that affect the QOL (Hwang et al., 2021). Few studies point to psychological and social factors (Prihodova et al., 2009).

Patients may feel fear of rejection, which causes psychological disorders such as depression after KT. KTR have to adapt to the new lifestyle and integrate with society. The QOL can improve depending on the condition of the new kidney, lifestyle, fewer problems after KT, and surrounding conditions (El Rasheed et al., 2020).

3. MATERIAL AND METHOD

3.1 Design of the Study

It is cross-sectional and descriptive research.

3.2 Participants and Setting of the Study

The Study was conducted in Baghdad Teaching Hospitals (Medical City) among patients who undergo KT. We calculated the sample size in our study by using G*power based on medium effect size (0.25), an alpha error probability of 0.05, a power of 0.80, and which would be 180. The final sample size is 194. In Medicine City, there are eight beds dedicated to kidney transplantation. The healthcare team consists of approximately 18 nurses and 10 specialist physicians. An average of 80 kidney transplants are performed each year.

3.2.1. The inclusion criteria

The Study's population will include individuals aged 18 to 65 and all genders who have undergone KT in Baghdad teaching Hospitals (Medical City); all participants speak and understand Arabic. All KTR are from living donors.

3.2.2. The exclusion criteria

Those with a mental or cognitive disability, patients with significant medical issues, and those who refused to give consent were also excluded.

3.3 Data Collection

Data were collected using a paper-based questionnaire and interviews with patients who met the inclusion criteria and who became 194 participants. Patients from all governorates of Iraq were met at Medicine City (the main specialized center in Iraq and Baghdad) for periodic review, as well as patients hospitalized in kidney transplant wards. It takes approximately 15 minutes for each patient to answer the questionnaire. The data were collected from December 15th, 2021, to April 15th, 2022.

3.4 Research Instrument

Two parts of the data collecting tools were used: Sociodemographic and Clinical Characteristics Form and the World Health Organization Quality of Life Instrument, Short Form (WHOQOL-BREF) (Appendix 3).

3.4.1. Part One: Sociodemographic and Clinical Characteristics Form

It consists of 9 questions, including the patient's age, gender, working status, marital status, educational qualification, an indication of transplantation, duration of KT, donor's ID, and immunosuppressant type.

3.4.2. Part Two: WHOQOL-BREF scale

WHOQOL-BREF scale was employed in this study. The World Health Organization developed this scale in 1997, and Ohaeri and Awadalla conducted a validity and reliability assessment in 2009 (Ohaeri & Awadalla, 2009). After that, it was modified for Arab society and confirmed appropriate (Ohaeri & Awadalla, 2009). The WHOQOL-BREF Arabic version is a 26-item measure. The scale items are rated on a 5-point Likert scale of 1 (Very bad/very dissatisfied) to 5 (Very good/Very satisfied). The general quality of life dimension includes two items that are looked at separately: The first question probes an individual's overall quality of life, while the second probes an individual's perception of overall health. The score ranges from 2 to 10. A higher score indicates a better general quality of life. The physical health dimension includes seven items. The score ranges from 7 to 35. A higher score indicates better physical health. The psychological health dimension consists of 6 items. The score ranges from 6 to 30. A higher score indicates better psychological health. The social relationships dimension consists of 3 items. The score ranges from 3 to 15. A higher score indicates better social relationships. The environment dimension includes eight items. The score ranges from 8 to 40. A higher score indicates better environmental life (University of Washington, 2011).

An Arabic-language study found that the scale's Cronbach's alpha coefficient was 0.93 for the WHOQOL-BREF scale, the physical health domain was 0.80, the psychological health domain was 0.77, the realm of the social relation was 0.69, and the environmental part was 0.83. The scale accounts for 58.3 percent of all variance (Ohaeri & Awadalla, 2009). Our study found that the scale's Cronbach's alpha

coefficient was 0.90 for the WHOQOL-BREF scale, general quality of life was 0.75, the physical health domain was 0.77, and the psychological health domain was 0.70, respectively, the social relationships domain was 0.71, and the environmental field was 0.73. The content validity index was 86.

3.5 The Ethical Considerations

The approval of the Ministry of Health and Environment of Iraq/Medical City Health Directorate/Training and Human Development Center was obtained according to Ministry Decision No: 45631 on December 7th, 2021 (Appendix 1). The student researcher also received research ethics decision No: 23 on Çankırı Karatekin University on November 10th, 2021 (Appendix 2). Consent of all patients was obtained before sample collection. Medical ethics is observed in accordance with the Declaration of Helsinki.

3.6 Data Analysis

Data were analyzed using the statistical package for social sciences (SPSS) for Windows version 26. The descriptive statistical measures of frequency, percentage, mean, and standard deviation were used to describe the subjects' sociodemographic and clinical characteristics form. The distribution related to Kolmogorov-Smirnov in the results section is not normal. Mann-Whitney U test and Kruskal Wallis test were also used.

4. RESULTS

Table 1: Participants' sociodemographic and clinical characteristics (n = 194).

Variable	**Min-Max**	**Mean±SD**
Age (Years)	18 - 65	38.16 ± 11.9
	n	**%**
Gender		
Female	54	27.8
Male	140	72.2
Marital Status		
Single	59	30.4
Married	135	69.6
Level of education		
Unable to read and write	3	1.5
Read and write	23	11.9
Elementary school	18	9.3
Secondary school	49	25.3
University graduate	101	52.1
Working Status		
Work	118	60.8
Does not work	76	39.2
Immunosuppressant		
Triple therapy (Tacrolimus, Mycophenolate and Prednisone)	141	72.7
Triple therapy (Cyclosporine, Mycophenolate and Prednisone)	50	25.8
Dual therapy (Tacrolimus and Mycophenolate)	3	1.5
Duration of Kidney Transplantation		
Less than one year	35	17.5
1-5-years	121	60.0

Longer than 5-years	44	22.0
Donor's Identity		
Relatives	82	42.3
Non-relatives	112	57.7
Indication of kidney transplantation		
I do not know	10	5.0
Renal Failure	27	13.9
Nephrotic Syndrome	20	10.3
HT	20	10.3
Renal Atrophy	52	26.8
DM	34	17.5
Kidney cysts	15	7.5

The study results reveal that the age means 38.16 ± 11.9 of the patients in our study, 72.2% were male, and 69.6% were married; 52.1% were university graduates; 60.8% were working; 72.7% used Triple therapy (Tacrolimus , Mycophenolate and Prednisone); 60% of the duration of KT was 1–5 years; 57.7% were non-relatives; the indication of KT was 26.8% renal atrophy (Table 1).

Table 2: Patients' mean quality of life score (n = 194).

	Minimum	Maximum	Mean± SD
GQOL	2	10	6.89 ± 1.59
Physical Health	13	34	22.2 ± 3.85
Psychological Health	13	28	20.4 ± 3.43
Social Relationships	4	15	10.34 ± 2.48
Environmental Health	15	40	29.31 ± 5.58

The study results show that kidney transplant patients in Iraq have a moderate quality of life. The mean score of the general quality of life was 6.89 ± 1.59; physical health was 22.2 ± 3.85, psychological health was 20.4 ± 3.43, social relationships was 10.34 ± 2.48, environmental health was 29.31 ± 5.58 (Table 2).

Table 3: Comparison of sub-dimensions of WHOQOL-BREF according to gender factor.

Ranks					Mann-Whitney U	Z	p-value
	Gender	**N**	**Mean Rank**	**Sum of Ranks**			
General Quality of Life	Female	54	91.94	4964.50	3479.500	-.875	.382
	Male	140	99.65	13950.50			
Physical Health	Female	54	94.46	5101.00	3616.000	-.470	.639
	Male	140	98.67	13814.00			
Psychological	Female	54	105.22	5682.00	3363.000	-1.195	.232
	Male	140	94.52	13233.00			
Social relationships	Female	54	100.03	5401.50	3643.500	-.393	.694
	Male	140	96.53	13513.50			
Environment	Female	54	107.14	5785.50	3259.500	-1.488	.137
	Male	140	93.78	13129.50			

There were no significant differences in participants' quality-of-life dimensions based on the gender groups ($p > 0.05$) (Table 3).

Table 4: Comparison of sub-dimensions of WHOQOL-BREF according to working status factor.

Ranks					Mann-Whitney U	Z	p-value
	Working Status	**N**	**Mean Rank**	**Sum of Ranks**			
General Quality of Life	Work	118	109.10	12874.00	3115.500	-3.660	.000
	Does not work	76	79.49	6041.00			
Physical Health	Work	118	110.38	13024.50	2964.500	-3.955	.000
	Does not work	76	77.51	5890.50			
Psychological	Work	118	107.29	12660.00	3329.000	-3.038	.002
	Does not work	76	82.30	6255.00			
Social relationships	Work	118	108.50	12803.00	3186.000	-3.429	.001
	Does not work	76	80.42	6112.00			
Environment	Work	118	105.64	12465.50	3523.500	-2.520	.012
	Does not work	76	84.86	6449.50			

When the relationship between the functional status of the patients and the sub-dimensions of the WHOQOL-BREF was examined; It was determined that there was a statistically significant difference in the sub-dimensions of the general quality of life, physical health, psychological health, social relations, and environment ($p < 0.05$) (Table 4).

Table 5: Comparison of sub-dimensions of WHOQOL-BREF according to marital status factor.

Ranks					Mann-Whitney U	Z	p-value
	Marital Status	**N**	**Mean Rank**	**Sum of Ranks**			
General Quality of Life	Single	59	98.78	5828.00	3907.000	-.214	.830
	Married	135	96.94	13087.00			
Physical Health	Single	59	104.59	6171.00	3564.000	-1.168	.243
	Married	135	94.40	12744.00			
Psychological	Single	59	103.96	6133.50	3601.500	-1.063	.288
	Married	135	94.68	12781.50			
Social relationships	Single	59	105.23	6208.50	3526.500	-1.278	.201
	Married	135	94.12	12706.50			
Environment	Single	59	101.53	5990.50	3744.500	-.663	.508
	Married	135	95.74	12924.50			

There were no significant differences in participants' quality-of-life dimensions based on marital status groups ($p > 0.05$) (Table 5).

Table 6: Comparison of sub-dimensions of WHOQOL-BREF according to the level of education factor.

Ranks				Kruskal-Wallis H	df	p-value
	Level of education	**N**	**Mean Rank**			
General Quality of Life	Unable to read and write	3	49.33	20.298	4	.000
	Read and write	23	61.17			
	Elementary school	18	75.28			
	Secondary school	49	100.79			
	University graduate	101	109.57			
Physical Health	Unable to read and write	3	44.33	25.814	4	.000
	Read and write	23	57.30			
	Elementary school	18	80.89			
	Secondary school	49	91.24			
	University graduate	101	114.23			
Psychological	Unable to read and write	3	45.83	19.386	4	.001
	Read and write	23	63.85			
	Elementary school	18	91.11			
	Secondary school	49	88.49			
	University graduate	101	112.21			
Social relationships	Unable to read and write	3	69.17	20.633	4	.000
	Read and write	23	64.61			
	Elementary school	18	85.00			
	Secondary school	49	85.61			
	University graduate	101	113.83			
Environment	Unable to read and write	3	105.83	20.406	4	.000
	Read and write	23	63.26			
	Elementary school	18	72.08			
	Secondary school	49	91.09			
	University graduate	101	112.69			

When the relationship between the level of education of the patients and the sub-dimensions of the WHOQOL-BREF was examined; It was determined that there was a statistically significant difference in the sub-dimensions of the general quality of life, physical health, psychological, social relations, and environment ($p < 0.05$) (Table 6).

Table 7: Comparison of sub-dimensions of WHOQOL-BREF according to receiving immunosuppressant factor.

Ranks				Kruskal-Wallis H	df	p-value
	Immunosuppressant	**N**	**Mean Rank**			
General Quality of Life	Triple therapy (Tacrolimus , Mycophenolate and Prednisone)	141	106.98	15.489	2	.000
	Triple therapy (Cyclosporine, Mycophenolate and Prednisone)	50	73.08			
	Dual therapy (Tacrolimus and Mycophenolate)	3	59.17			
Physical Health	Triple therapy (Tacrolimus , Mycophenolate and Prednisone)	141	107.39	17.354	2	.000
	Triple therapy (Cyclosporine, Mycophenolate and Prednisone)	50	73.27			
	Dual therapy (Tacrolimus and Mycophenolate)	3	36.50			
Psychological	Triple therapy (Tacrolimus, Mycophenolate and Prednisone)	141	104.62	9.555	2	.008
	Triple therapy (Cyclosporine, Mycophenolate and Prednisone)	50	80.59			
	Dual therapy (Tacrolimus and Mycophenolate)	3	44.50			
Social relationships	Triple therapy (Tacrolimus , Mycophenolate and Prednisone)	141	105.47	13.143	2	.001

	Triple therapy (Cyclosporine, Mycophenolate and Prednisone)	50	79.29			
	Dual therapy (Tacrolimus and Mycophenolate)	3	26.33			
Environment	Triple therapy (Tacrolimus , Mycophenolate and Prednisone)	141	105.12	10.210	2	.006
	Triple therapy (Cyclosporine, Mycophenolate and Prednisone)	50	78.75			
	Dual therapy (Tacrolimus and Mycophenolate)	3	51.67			

When the relationship between the receiving immunosuppressant of the patients and the sub-dimensions of the WHOQOL-BREF was examined; It was determined that there was a statistically significant difference in the sub-dimensions of the general quality of life, physical health, psychological health, social relations, and environment ($p < 0.05$) (Table 7).

Table 8: Comparison of sub-dimensions of WHOQOL-BREF according to the duration of kidney transplantation factor.

Ranks				**Kruskal-Wallis H**	**df**	**p-value**
	Duration of transplantation	N	Mean Rank			
General Quality of Life	Less than one year	34	106.29	9.967	2	.007
	1-5-years	116	87.63			
	Longer than 5-years	44	116.72			
Physical Health	Less than one year	34	96.50	8.642	2	.013
	1-5-years	116	89.71			
	Longer than 5-years	44	118.81			
Psychological	Less than one year	34	106.62	3.564	2	.168
	1-5-years	116	91.28			
	Longer than 5-years	44	106.84			
Social relationships	Less than one year	34	94.03	9.835	2	.007
	1-5-years	116	89.81			
	Longer than 5-years	44	120.47			
Environment	Less than one year	34	103.32	2.029	2	.363
	1-5-years	116	92.83			
	Longer than 5-years	44	105.32			

When the relationship between the duration of kidney transplantation of the patients and the sub-dimensions of the WHOQOL-BREF was examined, It was determined that there was a statistically significant difference in the sub-dimensions of the general quality of life, physical health, and social relations ($p < 0.05$) (Table 8).

Table 9: Comparison of sub-dimensions of WHOQOL-BREF according to relatives factor.

Ranks					Mann-Whitney U	Z	p-value
	Donor's ID	**N**	**Mean Rank**	**Sum of Ranks**			
General Quality of Life	Relatives	82	91.62	7512.50	4109.500	-1.275	.202
	Non-relatives	112	101.81	11402.50			
Physical Health	Relatives	82	92.08	7550.50	4147.500	-1.155	.248
	Non-relatives	112	101.47	11364.50			
Psychological	Relatives	82	91.71	7520.50	4117.500	-1.233	.217
	Non-relatives	112	101.74	11394.50			
Social relationships	Relatives	82	97.63	8006.00	4581.000	-.029	.977
	Non-relatives	112	97.40	10909.00			
Environment	Relatives	82	94.98	7788.00	4385.000	-.537	.591
	Non-relatives	112	99.35	11127.00			

There were no significant differences in participants' quality-of-life dimensions based on the kinship groups ($p > 0.05$) (Table 9).

5. DISCUSSION

In our study, it was found that most subjects have a moderate quality of life. Similar results to our Study were found in the studies conducted by (Dew et al., 1997; Junchotikul et al., 2015; Rebollo et al., 2000). In Study in Egypt (El Rasheed et al., 2020), unlike ours, was found lower results in most quality of life domains. The difference is thought to be due to cultural differences and the tools used.

In our study, it was found there were no significant differences in participants' quality-of-life dimensions based on the gender groups ($p > 0.05$). Similar results to our Study were found in the studies conducted by (El Rasheed et al., 2020; Jofre et al., 1998; Junchotikul et al., 2015; Megawati et al., 2019). In studies (Ali et al., 2010; Zyoud et al., 2016), unlike ours, found that gender has an impact on quality of life. The difference is thought to be due to the males having a more substantial physical structure than the females (Cashdan, 1998), in addition to the fact that Iraqi society is an oriental society that supports men's work.

In our study, it was found there are no significant differences in participants' quality-of-life dimensions based on marital status groups ($p > 0.05$). Similar results to our Study were found in the studies in Brazil, Egypt, and Thailand conducted by (Bittencourt et al., 2004; El Rasheed et al., 2020; Junchotikul et al., 2015). In Study in Palestine (Dweib et al., 2020), unlike ours, found there is a statistically significant effect between marital status and quality of life. The difference is thought to be because a married patient has family ties that give him stability and satisfaction with life.

In our study, it was found that patients who work have a better quality of life than those who do not ($p < 0.05$). Similar results to our Study were found in the studies conducted by (Devi, 2016; Nabi et al., 2008; Surtees et al., 2008). In studies (Antunes et al., 2018; Bittencourt et al., 2004; Dweib et al., 2020; Ismael & Rashid, 2019), unlike ours, found there here is no statistically significant difference in participants' QOL with working status. The difference is thought to be due to having work securing the financial income for the individual and their family, which positively influences one's QOL.

Our study found that there are university graduates with a better quality of life compared to those with lower educational levels ($p < 0.05$). Similar results to our

Study were found in the studies in Portugal, Egypt, Korea, Thailand, and Spain conducted by (Antunes et al., 2018; El Rasheed et al., 2020; Hwang et al., 2021; Junchotikul et al., 2015; Rebollo et al., 2000). In studies (Dweib et al., 2020; Lemos et al., 2015), unlike ours, the level of education did not affect the QOL. The difference is thought to be due to those who have a higher education, have a healthy culture, and can work and earn money, which increases their chance to improve their quality of life.

In our study, it was found there is patients who received triple therapy (Tacrolimus, Mycophenolate and Prednisone) had a better quality of life than those who received triple therapy (Cyclosporine, Mycophenolate and Prednisone) and dual therapy (Tacrolimus and Mycophenolate) ($p < 0.05$). Similar results to our Study were found in the studies conducted by (Fiebiger et al., 2004; Jurewicz, 2003; Perlman & Rao, 2014; Prasad et al., 2010). Unlike ours, unlike ours, in studies (El Rasheed et al., 2020; Dweib et al., 2020; Jofre et al., 1998; Mouelhi et al., 2018), no association between quality of life and immunosuppressive treatments. The difference is thought to be that Triple therapy (Tacrolimus, Mycophenolate and Prednisone) is associated with lower health risks than cyclosporine therapy. Additionally, the cyclosporine treatment affects patients' mental health as the effect extends to the skin, hair, weight gain, and hyperlipidemia.

Our study found that patients who have had KT for longer than five years have better quality of life than those who have had it for less time ($p < 0.05$). Similar results to our Study were found in the Study in Portugal, Ispania, conducted by (Antunes et al., 2018; Blancas et al., 2015). In Study in Korea led by (Hwang et al., 2021), unlike ours, found no significant difference. This finding could be explained by the fact that patients who received kidney transplants five years ago have gained experience in managing their lives, act when there are health problems, and accepting the new lifestyle.

In our study, it was found there were no significant differences in participants' quality-of-life dimensions based on the relatives group ($p > 0.05$). Similar results to our Study were found in the studies in Egypt, the United States of America, and Palestine conducted by (El Rasheed et al., 2020; Dobbels et al., 2007; Dweib et al., 2020). In Study in Korea (Hwang et al., 2021), unlike ours, found a significant difference based on the living donation in the physical domain. The difference is

thought to be due to the culture of Iraqi society, which accepts organ donation for foreign patients and believes in severing the relations between the donor and the transplanter after the operation.

6. CONCLUSION AND RECOMMENDATIONS

6.1 Conclusions

1. Most kidney transplant patients in Iraq have a moderate quality of life.
2. No significant differences was found between quality of life and the gender, relatives group, and marital status of the participants.
3. A statistically significant difference was found between quality of life and working participants, university graduates taking triple therapy (Tacrolimus), and who have been transplanted for more than five years.

6.2 Recommendations

1. Since there were statistically significant differences in all dimensions of subjects' quality of life in favor of those who work, it is vital to collaborate with the Iraqi Ministry of Health, Ministry of Labor and Social Affairs, and non-governmental organizations to provide job opportunities for patients with kidney transplantation.
2. There is a need to establish medical follow-up for patients who received kidney transplantation, particularly those with lower levels of education and those who received such a transplant for less than five years.
3. Nurses should care more for subjects who receive dual therapy (Tacrolimus) and those who have experienced kidney transplantation for less than a year.
4. Future studies should include more factors, such as the family environment and follow-up after surgery.

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APPENDICES

APPENDIX 1. Baghdad Training Hospitals (Ethics Committee Evaluation document).

APPENDIX 2. Ethics Committee Evaluation.

APPENDIX 3. Quality of Life Assessment Scale.

APPENDIX 4. Editing Certificate.

APPENDIX 3. Quality of Life Assessment Scale.

The Quality of Life of Patients with Kidney Transplantation and Investigation of Affecting Factors in Iraq.

ANAS RAMAID MOHAMMED KARAGHOOL and Assoc. Prof. Figen EROL URSAVAŞ encourage you to participate in their study. Knowing the purpose and method of the study is essential before selecting whether or not to participate. Reading and understanding this model are therefore critical. Ask us if you don't understand anything or if you'd want to know more about something. There is no obligation to participate in this study. Any time after you've agreed to take part in the study, you can opt out or withdraw from it. To participate, you must respond to the study's questions. Take your time and don't be influenced by anyone when filling out the forms you were given. Data collected through these forms will be absolutely private and used solely for research.

Socio-demographic and clinical characteristics
In preparation for the start, we ask you to answer some information that relates to you by marking the answer or filling in the blank:

Age (year/s): ----------

Gender: 1. Female-------- 2. Male--------

working condition: 1. I work-------- 2. I don't work--------

Marital Status:

1. Single-------- 2. Married--------

Educational level:

1. He neither reads nor writes-------- 2. He reads and writes-------- 3. The initial phase --------

4. Secondary stage-------- 5. Undergraduate stage--------

Reasons for a kidney transplant: ----------

Kidney transplant time: ----------

Donor ID:

1. Brother-------- 2. Sister-------- 3. Mother-------- 4. Father--------

5. Daughter-------- 6. Son-------- 7. Wife-------- 8. Husband--------

9. Cousin (male)-------- 10. Cousin (female)-------- 11. Unrelated--------

Immunosuppressive medications:

1. Triple therapy (Tacrolimus)-------- 2. Triple therapy (Cyclosporine)--------

3. Dual therapy (Tacrolimus)-------- 4. Dual therapy (Cyclosporine)--------

Quality of Life Scale - Abbreviated Version:

This questionnaire is about your health and aspects of your life. Please answer all questions. If you are not sure which answers you want to choose, try to choose the answer that best suits you and that can be considered your first answer. You must take into account all your standards, hopes, pleasures, and interests. We ask you to think about your life over the past two weeks.

		Very poor	Poor	Neither poor nor good	Good	Very good
1	How would you rate your quality of life?	1	2	3	4	5

		Very dissatisfied	Fairly Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
2	How satisfied are you with your health?	1	2	3	4	5

The following questions ask about how much you have experienced certain things in the **last two weeks**.

		Not at all	A Small amount	A Moderate amount	A great deal	An Extreme amount
3	To what extent do you feel that physical pain prevents you from doing what you need to do?	1	2	3	4	5
4	How much do you need any medical treatment to function in your daily life?	1	2	3	4	5
5	How much do you enjoy life?	1	2	3	4	5
6	To what extent do you feel your life to be meaningful?	1	2	3	4	5

		Not at all	Slightly	Moderately	Very	Extremely
7	How well are you able to concentrate?	1	2	3	4	5

8	How safe do you feel in your daily life?	1	2	3	4	5
9	How healthy is your physical environment?	1	2	3	4	5

		Not at all	Slightly	Somewhat	To a great extent	Completely
10	Do you have enough energy for everyday life?	1	2	3	4	5
11	Are you able to accept your bodily appearance?	1	2	3	4	5
12	Have you enough money to meet your needs?	1	2	3	4	5
13	How available to you is the information you need in your daily life?	1	2	3	4	5
14	To what extent do you have the opportunity for leisure activities?	1	2	3	4	5

		Not at all	Slightly	Moderately	Very	Extremely
15	How well are you able to get around physically?	1	2	3	4	5

The following questions ask you to say how good or satisfied you have felt about various aspects of your life over the **last two weeks**.

		Very Dissatisfied	Fairly Dissatisfied	Neither Satified nor Dissatisfied	Satisfied	Very satisfied
16	How satisfied are you with your sleep?	1	2	3	4	5
17	How satisfied are you with your ability to perform your daily living activities?	1	2	3	4	5
18	How satisfied are you with your capacity for work	1	2	3	4	5
19	How satisfied are you with yourself?	1	2	3	4	5

20	How satisfied are you with your personal relationships?	1	2	3	4	5
21	How satisfied are you with your sex life?	1	2	3	4	5
22	How satisfied are you with the support you get from your friends?	1	2	3	4	5
23	How satisfied are you with the conditions of your living place?	1	2	3	4	5
24	How satisfied are you with your access to health services?	1	2	3	4	5
25	How satisfied are you with your transport?	1	2	3	4	5

The following question refers to **how often** you have felt or experienced certain things in the last two weeks.

		Never	Infrequently	Sometimes	Frequently	Always
26	How often do you have negative feelings such as blue mood, despair, anxiety or depression?	1	2	3	4	5

CURRICULUM VITAE

Personal Information

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Education

MSc	Çankırı Karatekin University Graduate School of Health Sciences Department of Nursing	2020-Present
Undergraduate	University of Baghdad College of Nursing	2010-2014

Work Experience

Year	Institution	Position
2015-2016	Medical City, Continuing Nursing Education Unit	Assistant Manager
2015-2016	Medical City, Continuing Medical Education Unit	Assistant Manager
2015-2016	Medical City, Hemodialysis Unit	Academic Nurse
2017-2020	Medical City, Head of Public Health Unit	Assistant Manager
2017-2020	Medical City, Head of Health Promotion Unit	Manager
2015- Present	Medical City, Intensive Care	Academic Nurse (Senior)