

Assessment of Health Needs For Patients Undergoing Renal Transplantation

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Abstract

Background: Renal transplantation is the gold standard treatment for patients with end-stage renal disease as it demonstrates improved long-term survival compared to patients who remain on renal replacement therapy. **Aim:** This study aimed to assess health needs (physical, psychological, social and spiritual) for patients undergoing renal transplantation. **Design:** Descriptive exploratory design was utilized in carrying out this study. **Setting:** the study was conducted in renal transplantation unit at Nephrology and Urology Surgical hospital affiliated to Assiut University Hospital. **Subjects:** A Purposive sample of (30) who are on hemodialysis and met the inclusion criteria. **tools I-**Three parts (Personal Sociodemographic data, past & present medical history, health conditions before transplantation). **II-**Needs assessment questionnaire for m for patients before and after renal transplantation. **Results:** 46.70 % of the studied patients were at age group between 20-<30 years old and 96.7% of the m were males. There were highly statistically significant moderate positive correlations between social need score with physical score and social need score with psychological scores of the studied patients. **Conclusion:** more than one third of the patients before transplantation had high physical, psychological, social and spiritual need changed to low more than half in all needs of studied patients. **Recommendation:** More studies researches done in different types of needs before and after transplantation and assess which need more effected on patients.

Keywords: Renal transplantation, End stage renal disease, Health needs.

Introduction:

The kidneys are the hardest working organs of the urinary system. They have complicated several jobs such as regulation, excretion and producing hormones. One of the most important is helping your body eliminate toxins. The kidneys filter your blood and send waste out of your body in urine. The production of urine involves highly complex steps of excretion and re-absorption to maintain a stable balance of body chemicals. The critical regulation of the body's salt, potassium and acid content is performed by the kidney. They also, produce hormones that affect the function of other organs. For example, renin enzyme is a hormone produced by the kidneys that helps to regulate blood pressure and control calcium metabolism, produce an active form of vitamin D (calcitriol) that promotes strong healthy bones

and erythropoietin that stimulates the production of red blood cells (Patton&Bell,2022).

When the kidneys fail, it means they have stopped working well that called renal failure and include acute kidney injury (AKI) and chronic kidney disease (CKD) that can be treated with different renal replacement therapy (RRT) such as dialysis (hemodialysis or peritoneal dialysis), hemofiltration or a kidney transplant. A kidney transplantation is recommended for people who have end-stage kidney disease (ESRD) and will not be able to live without dialysis or a transplant (Hopkins, 2019).

End-stage renal disease (ESRD), is the last stage of chronic kidney disease. Chronic

kidney disease (CKD) is defined as structural or functional abnormality of the kidneys leading to slow and progressive worsening of kidney function that is typically irreversible (Nissenson & Fine, 2017).

Kidney transplantation is considered the best treatment option for people facing kidney failure because it can increase the chances of living a longer, healthier life. Having a kidney transplant can be a life-changing opportunity. A kidney transplantation is necessary when the kidneys are close to failure, before the need to start dialysis. Or start dialysis while waiting for a kidney transplantation (Hopkins, 2019).

Kidney transplantation surgery is considered safe, and is usually very successful. A successful kidney transplant depends on how healthy you are before the transplant, taking care of yourself after transplantation, and closely following the doctors' orders after the transplant. A kidney transplant is a surgical procedure done to implant a healthy kidney from another person. The kidney may come from a deceased donor or from a living donor (Hopkins, 2019).

There are three types of renal transplantation, a living-donor kidney transplant is the removal of a kidney from a living donor and placement into a recipient whose kidneys no longer function properly. Only one donated kidney is needed to replace two failed kidneys according to patient's health status, which makes living-donor kidney transplant an alternative to deceased-donor kidney transplant (Saran et al., 2019).

A pre-emptive kidney transplantation is the second type of kidney transplant that takes place before the kidney function deteriorates to the point of needing dialysis to replace the normal filtering function of the kidneys (Jay, 2019).

Currently, most kidney transplants are performed on people who are on dialysis because their kidneys are no longer able to adequately clean impurities from the blood. Pre-emptive kidney transplant is considered the

preferred treatment for end-stage kidney disease, but only about 20 percent of kidney transplants are performed pre-emptively in the U.S. (Saran et al., 2019).

A deceased-donor kidney transplant is the third type of transplant when a kidney from someone who has recently died which is removed with consent of the family or from a donor card and placed in a recipient whose kidneys have failed and no longer function properly and is in need of kidney transplantation (Hart, 2019). Overall, about two-thirds of the nearly 18,000 kidney transplants performed each year in the U.S. are deceased-donor kidney transplants, and the remaining are living donor kidney transplants (Saran et al., 2019).

A kidney transplant is often the treatment of choice for kidney failure compared to a lifetime on dialysis. A kidney transplant can treat chronic kidney disease with glomerular filtration rate (GFR, a measure of kidney function) less than or equal to 20 ml/min and end-stage renal disease to help you feel better and live longer (Hopkins, 2019).

Health needs assessment is required to guide care planning in part because many patients do not communicate concerns to their clinicians.

In addition, it provides a rich opportunity to more fully understand experiences of these patients. Moreover, careful assessment of patients' needs is central to the whole process of providing care. It is important that health needs for patients undergoing renal transplantation to be assessed to improve both quality and value of care provided (Gdor, Faddegon & Krambeck, 2014).

The health needs include: physical such as: general assessment, interventional technique, investigations and treatment, physical preparation, activities of daily living, diet regimen, pain management, control of nausea and vomiting, complications management and self-care post discharge. Psychological such as: reducing anxiety from pain and complications and information about

emotional health life style. Social such as: patient's social activity, work, driving and social support. Spiritual such as relation with god and motivation (Akram, Chan, McAuliffe & Chenzbran, 2018) .

Significance of the study:-

In U.S.A, About one-third of all kidney transplants performed in the U.S. are living-donor kidney transplants. The other two-thirds involve a kidney from a deceased donor and Pre-emptive (Saran et al., 2019).

Kidney transplant is considered the preferred treatment for end- stage kidney disease, but only about 20 percent of kidney transplants are performed pre-emptively in the U.S (Saran et al., 2019).

As of the end of 2017, 114, 958 patients were waiting for life-saving organ transplants in the United States; of these, 87% are waiting for a kidney transplant, median wait list for an individual's first kidney transplant is 3.6 years and varies depending on factors such as blood group, geographic location, and organ availability (Lasiandra & Young, 2021).

About two-thirds of the nearly 18,000 kidney transplants performed each year in the U.S. are deceased-donor kidney transplants, and the remaining are living donor kidney transplants (Saran et al., 2019).

Until now, cadaveric renal transplantation isn't legal in Egypt, so introducing living donor renal transplantation has seemed to be the only logical choice to save many patients. Today ministry of health discusses cadaveric renal transplantation in Egypt legally, and also the upper committee of kidney transplantation in Egypt announced that 1351, 1505 cases had made kidney transplantation procedures in 2015 and 2016, while only 228 cases had made kidney transplantation procedures in the first three months of 2017. There for this study will be carried out in an attempt to handle the needs for patient with kidney transplantation.

Aim of the Study:

The aim of this study was to assess health needs for patients undergoing renal transplantation through:

- Assessing patients' physical needs.
- Assessing patients' psychological needs.
- Assessing patients' social needs.
- Assessing patients' spiritual needs undergoing renal transplantation.

Research questions:-

What are the health needs for patients undergoing renal transplantation?

Research design:-

Descriptive exploratory design was utilized in this study.

Subjects and methods:

I. Technical Design:

It included research design, study settings, subject and tools of data collection.

A-Research Design: A descriptive exploratory research design was utilized to conduct the aim of this study.

B-Study Settings: The present study was conducted in renal transplantation unit and Urology Outpatients Clinic at Nephrology and Urology Surgical hospital in Assiut University Hospital, renal transplantation unit consisted of five sectors: 1stsector external department contained 4 beds in 2 rooms and preparation room with four beds, 2ndsector operation rooms contained donor, recipient and recovery room contain 2 beds, 3rd sector ICU include 2 beds and 4 beds separated in each 4 intermediate care unit. Three sectors on 9th floor, but on 2nd floor: 4th sector dialysis used for patients before and after transplant unit contains 2 rooms for male and female with 2 beds and three dialysis machines, 5th sector renal transplant clinic include 3 rooms Urology room, nephrology room with 2 nurses and secretary room.

So, the total number of beds in unit was 18 beds. Each sectors had specialist nurses responsible of caring of patient in all five

sectors. The total number of nursing staff who work in this unit was 15 nurse specialists.

C-Subjects: The sample was chosen as the number of available patients with ESRD undergoing renal transplantation of the present study were 30 patients who meet the following criteria:-

- Sex: males and females.
- Age: (18-50) years.
- Different educational levels .
- Time :four years from (2018-2022).

Inclusion criteria:

- Patients who were being ESRD.
- Whose age 18 years old to 50 years.
- Conscious adult patients.
- agreed to participate in the study and cooperated.

Exclusion criteria:

Patients who had systemic lupus , HCV, HIV .

Data collection Tools:

Tool I: Consisted of three parts (**first Part:** Personal Sociodemographic data including (age, sex, marital status, educational level, occupation, residence, family number, role in family, life style), **second part:** medical history including (Past, Present and family history) and **third Part** health conditions before transplantation including (clinical data and laboratory investigations).

Tool II: Needs assessment questionnaire form for patients before and after renal transplantation was adapted and modified from previous researches (Abysekera& Dawson, 2015; and Abdel Fattah, 2020). It included 4 main dimensions (physical, psychological, social, and spiritual).It included four parts as following:

Part (1): Demographic characteristics of the studied patients: which include(12 questions) age, sex, marital status, educational level, occupation, residence, family number, role in family, life style, role of disease in family care, monthly income and smoking.

Part (2): Patients and family medical records: Used to assess and collected data about (patients and family) past medical history. The sheet consisted of past medical history of patient questions (10) in the form of multiple-choice questions (MCQ), the questions divided into (2) sections:

- o Past medical patient history: It was composed of (6) questions.
- o Past medical family history: It was composed of (4) questions.

Part (3): Health conditions before transplantation:

Used for assessing and collecting database on reviewing of scientific literature which including clinical data (6) items and laboratory investigations (32) results written and filled by researcher.

□ Current health history: It was composed of (12) questions in the form of yes or no.

Tool II: Needs assessment questionnaire form written by English language as it filled by researcher for patients before and after renal transplantation was adapted from previous researches and modified by researcher (Abysekera& Dawson, 2015; and Abdel Fattah, 2020). It included 4 main dimensions (physical, psychological, social, and spiritual).

The scoring system: In all dimensions calculation of Score percentage each was calculated by (the observed score / the maximum score) *100.

Then the score was categorized into 3 categories: [low need (<50%), average need (50 – 75%), and high need (>75%)].

Dimension 1.Physical needs:

A-General health: it was adapted and modified from (Abysekera& Dawson, 2015; and Abdel Fattah, 2020) and consisted of 15 questions. The scoring system was rating and ranking from 1 (not at all), 2 (moderate), 3 (extremely) points for each item. General health score was calculated by summation of all 15 items, ranged from 15 – 45 grades..

❖ **Scoring system:** In all dimensions calculation of Score percentage each was calculated by (the observed score / the maximum score) *100.

Then the score was categorized into 3 categories: [low need (<50%), average need (50 – 75%), and high need (>75%)]. maximum score was 44 score and minimum was 0, lower score means bad general health and poor quality of life.

B- Activities of daily living: it was adapted and modified from (Abysekera& Dawson, 2015; and Abdel Fattah, 2020) and included 2 parts [11 basic ADL questions and 6 Moderate ADL questions]. The scoring system was rating and ranking from 1 (able without help), 2 (able with some help), 3 (unable completely) points for each item. Basic and moderate ADL score was calculated by summation of all basic 11 items and all 6 moderate items, ranged from 11 – 33 grades for basic ADL and 6 – 18 grades for moderate ADL.

C-Exercise: it was adapted and modified from (Jones et al., 2008) and consisted of 6 questions. The scoring system was rating and ranging from 1 (always), 2 (sometimes), 3 (rarely) points for each item. Exercise score was calculated by summation of 6 items, ranged from 6 – 18 grades.

D- Diet: it was adapted and modified from (National kidney Foundation, 2019) and consisted of 10 questions. The scoring system was rating and ranking from 1 (always) ,2 (sometimes), 3 (never) points for each item. Diet score was calculated by summation of 10 items, ranged from 10 – 30grades.

E-Pain: it was adapted and modified from (Abysekera& Dawson, 2015; and Abdel Fattah, 2020) and consisted of 8 questions. The scoring system was rating and ranging from 1 (never), 2 (sometimes), 3 (always) points for each item. Pain score was calculated by summation of 8 items, ranged from 8 – 24 grades.

Physical need score: it was calculated by summation of the previous 5 domains, ranged from 56 – 168 grades.

Dimension 2. Psychological needs: it was adapted and modified from (Abysekera& Dawson, 2015; and Abdel Fattah, 2020) and consisted of 7 questions. The scoring system was rating and ranging from 1 (always), 2 (sometimes), 3 (never) points for each item. Psychological need score was calculated by summation of 7 items, ranged from 7 – 21 grades. Score percentage each was calculated by (the observed score / the maximum score) *100. Then the score was categorized into 3 categories: [low need (<50%), average need (50 – 75%), and high need (>75%)].

Dimension 3. Social needs: it was adapted and modified from (Abysekera& Dawson, 2015; and Abdel Fattah, 2020) and consisted of 13 questions. The scoring system was rating and ranging from 1 (always), 2 (sometimes), 3 (never) points for each item. Social need score was calculated by summation of 13 items, ranged from 13 – 39 grades. Score percentage each was calculated by (the observed score / the maximum score) *100. Then the score was categorized into 3 categories: [low need (<50%), average need (50 – 75%), and high need (>75%)].

Dimension 4. Spiritual needs: it was adapted and modified from (Abysekera& Dawson, 2015; and Abdel Fattah, 2020) and consisted of 9 questions. The scoring system was rating and ranging from 1 (satisfied), 2 (slightly satisfied), 3 (dissatisfied) points for each item. Spiritual need score was calculated by summation of 9 items, ranged from 9 – 27 grades. Score percentage each was calculated by (the observed score / the maximum score) *100. Then the score was categorized into 3 categories: [low need (<50%), average need (50 – 75%), and high need (>75%)].

II. Operational Design:

The operational design included; preparatory phase, ethical consideration, content validity and reliability of the developed tools, pilot study and field work.

A-Preparatory Phase:

This phase started with a review of current and past, national and international related literature and theoretical knowledge concerning the subjects of the study using textbooks, articles, journals, and websites. This review was helpful to the investigator in reviewing and developing the data collection tools, and then the investigator tested the validity of the tool through jury of expertise to test the content, knowledge, accuracy, and relevance of questions for tools.

B-Content, Face Validity and Reliability:**Content face validity:**

Testing validity referred to how well a scientific test actually measured what it intended to measure of the proposed tools by using face and content validity.

Face validity aimed at inspecting the items to determine whether the tools measured what supposed to measure.

Content validity was conducted to determine whether the content of the tools covered the aim of the study. Validity tested by a jury of five experts (two professors, two assistant professors and one lecturer) from Medical Surgical and Critical Nursing Department at Faculty of Nursing, Ain Shams University. The experts reviewed the tools for clarity, relevance, comprehensiveness, simplicity and applicability, accuracy and clarity in language. Based on their recommendation's correction, addition and / or omission of some items and minor modification were done.

C-Testing reliability: It was referred to the extent to which the same answers can be obtained by using the same used tools more than one time. It was done for proposed tools and reported statistically by Cronbach's Alpha test reliability analysis.

Tool's reliability: Study tools were tested for its internal consistency by Cronbach's Alpha. It was 0.791 for the second part of the questionnaire (needs assessment) questionnaire.

D-Pilot Study: was carried out on 10% of the total study sample (3 patients) to evaluate the applicability, efficiency, clarity of tools, assessment of feasibility of field work, beside to detect any possible obstacles that might face the investigator and interfere with data collection. Necessary modifications were done not affect the tool's structure so based on the pilot study findings such as (omission of some questions from tool and change some of negative questions to positive) in order to strengthen their contents or for more simplicity and clarity. Patients included in the pilot sample were not excluded from the main study sample.

Field work:

Data were collected during four years started at the beginning of January 2018 to April 2022but **2020** no operations had done because of COVID 19.

The investigator was visited the study setting 2days / week (Sunday and Tuesday) at morning shift (8.0am-2.0pm) and afternoon shift (2.0pm -8.0pm) for patients with renal failure (ESRD) at the renal transplantation clinic in the Urology and Nephrology Hospital at Assiut University Hospital to collect data. After that, explained the purpose of the study after introducing herself.

The total number of patients (30) who conducted at the Urology and Nephrology Hospital at Assiut University Hospital, which affiliated to renal transplantation clinic in Assiut University who can actively participate in the study.

The investigator first explained the aim of the study to the patients and reassures them that information collected was treated confidentiality and that it was used only for the purpose of the research. The investigator had met patients at renal transplant clinic before and after in Urology and Nephrology Hospital, which affiliated to Assiut University, and the investigator asked the patients and wrote their answers, the investigator completed questionnaire form within an average time 45 - 60 minutes as following :demographic and medical data form were collected from the

medical records of the patients and from the patients themselves and sometimes from the Patients' relatives, demographic and medical data form took about 10-15 minutes ,then the interview questionnaire part one took 10-15 minutes was filled by the investigator from the patients for collecting data regarding Patients' health needs form took about 35 -45minutes .

(III) Administrative design

Before starting data collection, an official letter requesting permission to conduct the study was directed from the dean of the faculty of nursing Ain Shams University to Medical Director of renal transplantation unit and director of Urology and Nephrology hospital in Assiut University Hospital, which affiliated to Assiut University, to obtain their approval to carry out this study. This letter included the aim the study and photocopy from data collection tools in order to get their permission and help for collection of data

Ethical consideration:

The ethical research considerations in this study included the following: The research approval was obtained from the Scientific Ethical Committee in Faculty of Nursing, Ain Shams University before starting the study. The investigator clarified the objective and aim of the study to the patients included in the study. The investigator assured maintaining anonymity and confidentiality of the subject data. Patients were informed about their rights to participate or withdraw from the study at any time without any reason. Oral consent was obtained from the patients to participate in the study. Ethics, values, culture and beliefs were respected.

IV. Statistical design:

Data collected from the studied sample was revised, coded and entered using Personal Computer (PC). Computerized data entry and statistical analysis were fulfilled using the Statistical Package for Social Sciences (SPSS) version 20.

Data were tabulated and statistically analyzed using SPSS, version 20 (SPSS Inc., Chicago, IL). Quantitative data were described as mean and standard deviation / median and

interquartile range. Normality test (Kolmogorov-Smirnov test) was done for quantitative data and revealed that most of quantitative data were non-parametric data. Scoring system was done and calculated for each domains of needs assessment and a total score was calculated. Wilcoxon signed rank test was used for comparing quantitative variables between before and after. Qualitative data were expressed as frequencies (n) and percentage (%).

McNemar-Bowker test was used to test the association between 2 dependent qualitative variables (before and after).

Spearman correlation coefficient was used to correlate between nonparametric quantitative variables.

A correlation coefficient greater than zero indicates a positive relationship while a value less than zero signifies a negative relationship.

A value of zero indicates no relationship between the two variables being compared.

Limitation of the study:

One of the challenges that the investigator faced in this study was the Corona pandemic and the consequent difficulty of data collection, because of no patients transplanted which made the investigator obliged to collect studied patients in four years instead of 6 months

Results:

Table (1): shows that, the mean age of studied patients was 28.5 ± 9.1 years 96.7 % of them were males. Regarding marital status, 60% of the patients were married and regarding educational level, it was found that 66.7% of them were graduated from secondary school while 20.0 % of them were graduated from university 70.0% of patients who had working and 80.0% of them do not need muscular effort. Also, the mean family size of studied patients was lived with families was 5.0 ± 2.5 members 53.3% of studied patients were fathers and 43.3% of them were sons, 90.0% of the patient's disease affected the role in the family and

60.0% of them had enough income although they had not governmental work

Figure (1): shows that, 31.7% of the patients were on hemodialysis session from 5 years to less than 10 years, from one year to less than five in 25% of the studied patient, while duration of less than one year was presented in 11.6% of the patients.

Table (2): showed that 60.0% of the studied patients didn't have chronic diseases but 75.0% of them have HTN. Also, 23.3% of studied patients their most common cause of renal failure was HTN, 16.7% of them have pyelonephritis, 13.3% of patients have urinary tract reflux, 13.3% of them have renal atrophy, 6.7 of patients their cause of disease was analgesics abuse, 23.3% of them their cause of renal failure was unknown.

Also, the table showed the mean duration of dialysis 16.0 ± 15.2 months, 100.0% relative donors, 50.0% of relatives were wives while 26.7% were mothers. Also, 93.3% of studied patients did not have family history of renal failure, 13.3 % of their families suffered from kidney removal, 23.3 % of them had renal stones

and none of patient's families had renal transplantation.

Table (3): shows that there was highly statistically significant reduction in Creatinine, BUN and direct bilirubin after renal transplantation. And there is statistically significant increase of WBC count and blood glucose levels after transplantation. Also, shows that there is highly statistically significant increase of GGT and HbA1C, and there is statistically significant decrease in uric acid, sodium and potassium after transplantation.

Table (4): shows that there is highly statistically significant reduction in needs assessment scores after renal transplantation such as (physical, psychological, social, spiritual) needs and in general health domains as basic ADL activities, moderate ADL activities, exercises, diet and pain.

Figure (2): various needs levels before renal transplantation shows clear increase of patients' needs before transplant.

Figure (3): various needs levels after renal transplantation obvious decrease of patients' needs after transplant.

Table (1): Distribution of Sociodemographic data of the studied patients (N = 30).

		Mean \pm SD	Median (IQR)
Age		28.5 \pm 9.1	26.0 (21.0-33.0)
		N	%
Sex	Male	29	96.7%
	Female	1	3.3%
Marital status	Single	12	40.0%
	Married	18	60.0%
	Illiterate	1	3.3%
Educational level	Read & write	1	3.3%
	Primary	1	3.3%
	Preparatory	1	3.3%
	Secondary	20	66.7%
Occupational status	University	6	20.0%
	Working	21	70.0%
	Not working	9	30.0%
Occupation needs muscular effort	No	24	80.0%
	Yes	6	20.0%
		Mean \pm SD	Median (IQR)
Family size		5.0 \pm 2.5	4.0 (3.0-7.0)
		N	%
Role in family	Father	16	53.3%
	Mother	1	3.3%
	Son	13	43.3%
Living style	With family	30	100.0%
	No	3	10.0%
Disease affects the role in family	Yes	27	90.0%
	No	3	10.0%
Income	Enough	18	60.0%
	Not enough	12	40.0%

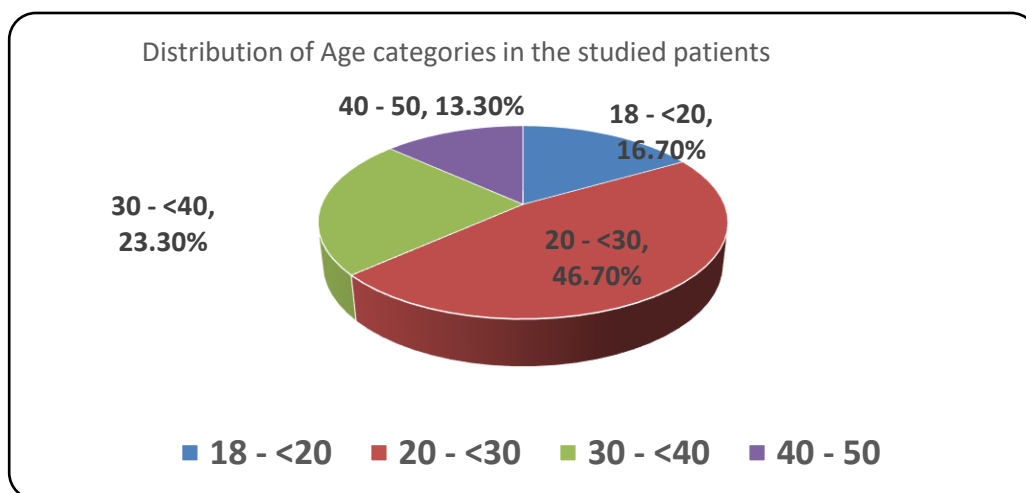
**Figure (1). Distribution of age categories of the studied patients**

Figure (1): illustrated that 46.70% of the studied patients between age 20 -< 30 years old then 23.30% of them between age 30-<40 years.

Table (2): Distribution of past history and renal family history data of the studied patients (N = 30).

		N	%
Chronic diseases	No	18	60.0%
	Yes	12	40.0%
Chronic disease types	HTN	9	75.0%
	CHD	3	25.0%
	Pyelonephritis	5	16.7%
	Polycystic kidney	1	3.3%
	Renal atrophy	4	13.3%
	HTN	7	23.3%
Renal failure causes	Analgesic abuse	2	6.7%
	Urinary tract reflux	4	13.3%
	Unknown	7	23.3%
Duration of dialysis (<i>Mean ±SD</i>) (<i>Median (IQR)</i>)		16.0 ±15.2	10.5 (4-24)
Donor relation	Relative	30	100.0%
	Wife	15	50.0%
	Mother	8	26.7%
Donor relation degree	Father	3	10.0%
	Brother/sister	3	10.0%
	Son	1	3.3%
Family history of RF	No	28	93.3%
	Yes	2	6.7%
Kidney removal	No	26	86.7%
	Yes	4	13.3%
kidney removal family relation	Father	1	50.0%
	Cousin	1	50.0%
Family history of renal stone	No	23	76.7%
	Yes	7	23.3%
Family history of renal stone relation	Wife	3	42.8%
	Ante	2	28.6%
Family history of Kidney transplant	Father	2	28.6%
	No	30	100.0%

Table (3): Comparison of renal function test, CBC, blood glucose tests and liver function results between before and after renal transplantation (N = 30).

	Before		After		P
	Mean ± SD	Median (IQR)	Mean ± SD	Median (IQR)	
Creatinine	1162.3 ± 1953	745.5 (624-984)	136.2 ± 136.3	116.6 (71-139)	.000**
BUN	17.8 ± 10.9	15.5 (10.5-22.8)	8.9 ± 6.3	7.2 (5.6-10.4)	.000**
Uric acid	7.8 ± 4.6	6.4 (5-9)	5.9 ± 2.2	5.4 (4.7-6.7)	.031*
HB	11.2 ± 1.9	11 (9.2-13)	10.6 ± 2.2	10.9 (9-12)	.349
RBC	4.2 ± 1.8	3.7 (3.3-4.6)	4.1 ± 1.2	4 (4-4.5)	.344
WBC	7.2 ± 2.5	7 (5.9-8.5)	14.2 ± 31	8.7 (6.6-10)	.019*
Platelets	203.6 ± 54.9	202.5 (170-241)	210.2 ± 67.3	208 (162-232)	.861
Fasting blood Glucose	72.1 ± 41.1	81 (60-96)	76 ± 46.2	82.8 (70-107)	.006*
2hr postprandial Glucose	11.1 ± 23.4	5 (4.6-5.6)	12.6 ± 26.3	6.1 (4.8-7.1)	.003*
HbA1C	5 ± 2.6	4.8 (4.4-5)	6.2 ± 6	5 (4.9-5.4)	.000**
Calcium	9.3 ± 6.7	8.7 (7.2-9.7)	10.6 ± 12.3	8.9 (8.3-9.2)	.305
Phosphorus	8.6 ± 24.2	3.2 (2.5-5)	12 ± 33.5	2.8 (2.5-3.5)	.156
Sodium	124.7 ± 41.5	137 (135-141)	126.3 ± 41.5	140 (137-141)	.030*
Potassium	9.1 ± 23.8	4.9 (4.2-5.5)	8.8 ± 25	4.2 (4-4.8)	.045*
Direct bilirubin	3.9 ± 13.6	0.3 (0.1-2.6)	2.6 ± 11.6	0.2 (0.1-0.5)	.000**
Total bilirubin	9.8 ± 28.4	0.7 (0.3-5.1)	6.4 ± 22.1	0.5 (0.3-4)	.273
GGT	38.6 ± 24	32 (24-51)	51.5 ± 28.5	51.5 (35-63)	.000**

Wilcoxon signed rank test was used ,High significant p-value <0.001

Table (4): Comparison of different needs assessment scores between before and after renal transplantation.

Needs assessment scores	Before		After		P
	Mean ± SD	Median (IQR)	Mean ± SD	Median (IQR)	
Physical need score	121.30 ± 11.4	122.5 (117-128)	80.2 ± 8.6	80 (75-84)	.000**
General health domain score	35.2 ± 5.5	36.5 (34-38)	20.8 ± 3.2	21 (18-23)	.000**
Basic ADL activities score	20.5 ± 4.2	20 (17-25)	13.7 ± 2.2	13 (12-15)	.000**
Moderate ADL activities score	13.9 ± 1.8	14 (13-15)	10.4 ± 2.6	11 (8-13)	.000**
Exercise domain score	15.1 ± 2.5	14.5 (13-18)	10.1 ± 1.6	10 (9-11)	.000**
Diet domain score	19.10 ± 2.8	19 (18-20)	13.3 ± 2.4	13 (12-14)	.000**
Pain domain score	17.5 ± 2.8	18 (17-19)	11.9 ± 1.9	12 (11-13)	.000**
Psychological need score	16.7 ± 2.4	17 (15-19)	9.7 ± 1.7	10 (8-11)	.000**
Social need score	28.5 ± 3.2	29 (26-31)	20.2 ± 2.8	20 (18.5-22)	.000**
Spiritual need score	19.5 ± 2.3	19.5 (18-21)	13.5 ± 2.7	13.5 (12-15)	.000**

Wilcoxon signed rank test was used, P-value ≤ 0.05 is considered highly statistically significant p-value ≤ 0.001 highly significant (**)

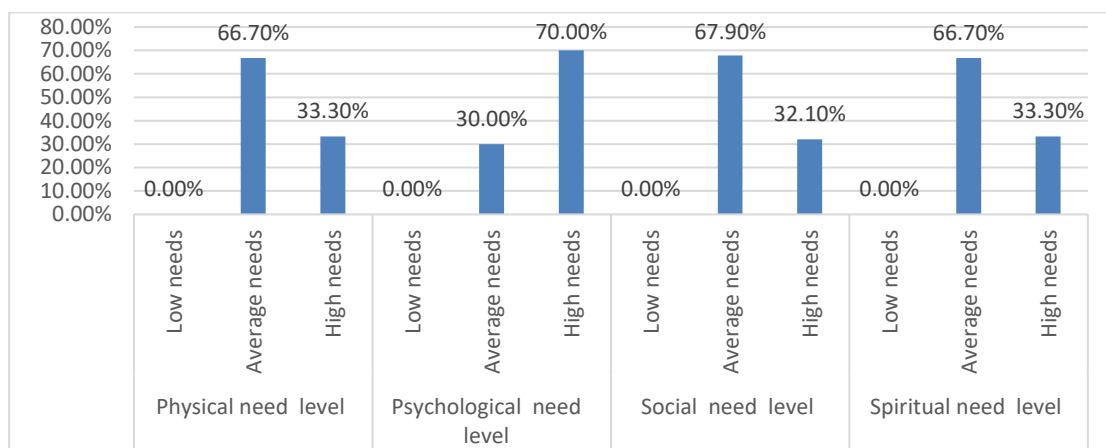


Figure (2): various needs levels before renal transplantation.

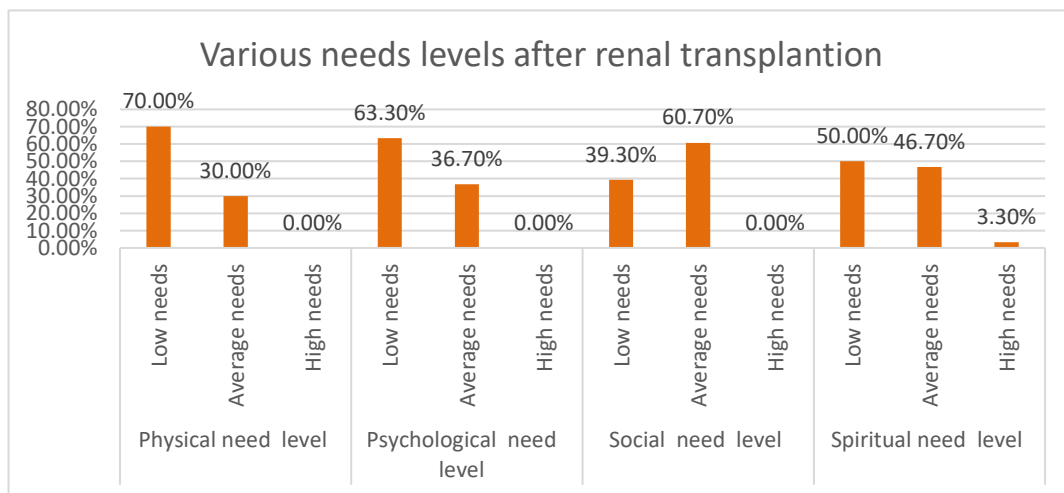


Figure (3): various needs levels after renal transplantation.

Discussion:

Regarding the demographic characteristics of the studied patients, the finding of the current study revealed that, the mean age of studied patients was 28.5 ± 9.1 years which establishes that less than half between age group of ($20 \leq 30$) years old. This may be due to kidney transplant recipients were at the middle age of their lives and most of them were males as they do not care about their health and do not drink plenty of water. These results in consistent with the results of study done by (*Dweib K., 2020*) study entitled "Quality of life For Kidney Transplant Palestinian patients" and stated that the mean \pm SD age of the studied patients was 41 ± 24 years and the majority of kidney transplant recipients were males with a percentage of 79.8% , the finding of the current study is similar with (*Baker and Ghoneim, 2015*) in a study titled "Rehabilitation of renal transplant recipients", that their sample age range from 21-30 years. However , the finding of the current study is in consisted with (*Abd-EL-Aziz et al., 2019*) study entitled " Bio-psychosocial Needs of the Patients post Renal Transplant" and stated that less than half of the studied patients were above 60 years at mean \pm SD age of studied patients was 52.5 ± 14.53 . Regarding to gender, the findings of the current study revealed that most of studied patients were males similar with results of study done by (*Abd-EL-Aziz et al., 2019*) slightly more than half of the patients under study were males. This is in accordance with (*Raja, 2013*), in a study entitled" **kidney transplant, kidney failure, kidney transplantation**", who found that women had a lower chance of receiving kidney transplant than men, but they constitute the majority of living kidney donors. In relation to marital status of the current study, the result showed that three fifth of the patients under study were married. This might be due to in Upper Egypt(rural places prefer to marry their sons in young age (17–30) years old and usually by this age they are married, according to the Egyptian society culture and the kidney transplant recipients are looking forward to return to normal life. This finding is consistent with the finding of (*Abd-EL-Aziz et al., 2019*) their results showed that less two thirds of the

patients under study were married and similar with (*Kozier, Berman and Synder, 2013*), in their study entitled " Adherence of patients throughout two years after kidney transplantation toward therapeutic regimen", that the majority of the studied patients were married. This result is supported by (*Richard, 2013*), in a study titled " Assessment of Renal Structure and Function", that more than half of their patients were married. Concerning to educational level, the finding of the current study revealed that about two third of the studied patient had secondary school. This may be due to men in need to work for helping their families in their incomes. The present study finding in consistent with result of (*Abd-EL-Aziz et al., 2019*) which showed that more than one third of the patients under study had high educational level (*Ricka et al., 2015*), in their study entitled " Adequate Self-Care of Transplanted Patients", that the majority of their subjects had high degree of educational level. But these results disagreement with the study done by (*El Manzalawy, 2015*), in their study entitled " Relationship between Follow up Care and Quality of Life among Renal Transplant Recipients", who found that less than half of their subjects had basic education. In relation to occupational status, the current study demonstrated that less than one third of patients under study had free work and demonstrated that majority of patients under study do not need muscular effort this may be due to their families depend on their own projects as no governmental jobs, while the current study result is similar with (*Kring and Crane, 2014*) who found that the majority of his subjects were working. But the present study is against with (*Abd-EL-Aziz et al., 2019*) their reported that slightly less than half of patients under study had no work or house wife and in the same context (*ElManzalawy, 2015*) found that two thirds of their subjects were not working. In relation to residence, results indicated that the majority of patients under study from rural areas . This finding is consistent with (*El Saadany et al., 2014*) who reported that the majority of their subjects were from rural areas. This finding disagree with (*Abd-EL-Aziz et al., 2019*) revealed that more than half of patients under study were from

urban areas, this finding are in consisted with (*American Association of Nephrology Nurses and Technicians, 2016*) in a study entitled "Renal Osteoporosis. American Association of Nephrology Nurses and Technicians", it was supported that the majority of the patients with renal failure come from urban area and exposed to occupational hazard. This finding is in consistent with (*El Manzalawy, 2015*), who reported that more than half of their subjects were from urban area.

Regarding to past medical and family history the current study mentioned that two fifth of the studied patients had chronic diseases, three quarters of them had hypertension as a chronic disease while one quarter of them had chronic heart diseases, most of them hadn't family members suffered from renal failure while less than quarter of the studied patient's family members had renal stones while all of patients family members are not on renal transplant program. Also, the mean family size of studied patients was lived with families was 5.0 ± 2.5 members more than half of studied patients were fathers and more than two fifth of them were sons, most of the patient's disease affected their role in the family and three fifth of them had enough income. The present study result in the same line with (*Deif et al., 2015*) who conducted study entitled "effect of an educational program on adherence to therapeutic regimen among chronic kidney disease stage5 (CKD5) patients under maintenance hemodialysis" and reported that high percentage of the studied patients hadn't family members suffered from renal failure and half of them had hypertension. The present study disagree with *Ahmed, Abd Elzاهر & Sabra, (2021)* who conducted study entitled "structured teaching program's effect on knowledge and self-management behaviors for hemodialysis patients" and mentioned that slightly more than half of the studied sample hadn't associated chronic disease, more than one third were hypertensive as chronic disease. Also contrast with *Jebraeily, Makhdoomi (2018)* who conducted study entitled "factors influencing the improvement of self-management behavior in hemodialysis patients" and reported that one third of the studied

patients had hypertension as a cause of renal failure. The present study is disagree with (*Abd-EL-Aziz et al., 2019*) revealed that most of them hadn't enough income for treatment according to their report, while minority of them had enough income for treatment according to their report, this might due to the fact that most of patients were from the low socioeconomic status; regarding donor relation degree, the current study revealed that most of donors were relatives half of them are wives of studied patients and more than quarter are mothers of studied patients.

In current study more than three quarters of studied patients undergoing hemodialysis for three times per week and one fifth of them undergoing hemodialysis for twice per week. The current study results supported with (*Ahmed, Abd Elzاهر & Sabra, 2021*) who reported that all patients perform hemodialysis sessions three times per week. The present study results disagree with (*Ranadive, Sharma, Khan, 2019*) who conducted study entitled "knowledge and expressed practices of dietary regulation among chronic renal failure patients undergoing hemodialysis" and presented that half of them had dialysis sessions twice a week, one third of them had dialysis sessions twice a week, while minority of them had dialysis session more than 3 times a week.

These findings were agreed with (*Fradelos et al., 2021*), who mentioned that, majority of patients had satisfactory total QoL values. Also, (*Abu El kass et al, 2020*), who mentioned that, the highly affected dimensions of satisfaction are the spiritual and overall health of the quality of life of patients undergoing hemodialysis program, while the least affected dimensions of satisfaction are the physical and psychosocial quality of life and the majority of the them had average total quality of life.

Regarding to health conditions before transplantation the current study shows that highly statistically significant reduction in Creatinine, BUN and direct bilirubin after renal transplantation

The present study is similar with (*Maraghi et al., 2016*) in a study entitled "Longitudinal Assessment of Serum Creatinine Levels on Graft Survival after Renal Transplantation: Joint Modeling Approach", that median follow up time was 6.80 months. A linear decreasing trend in serum creatinine level over time was found ($P < 0.001$).

The current study is consistent with (*Lee Jet et al., 2021*) in a study entitled "clinical impact of serum bilirubin levels on kidney transplant outcomes" found that graft and patient survival was inversely associated with serum bilirubin levels, however bilirubin was not fractionated into the conjugated and unconjugated fractions in study. Also, (*Magsi et al., 2022*) in a study entitled "serum bilirubin as a predictor of graft outcomes after renal transplant" revealed that no statistically significant change in total bilirubin during the pre-transplant and post rejection period among patients that experienced rejection.

Regarding the present history of studied patients after end stage renal disease, the present study shows that less than three quarters of studied patients had hypertension, one fifth of them had heart diseases, the minority of them had DM, less than half of them had anemia and most of them admitted to hospital for doing surgery (AVF) for dialysis and one fifth of them had given blood transfusion.

The current study findings agree with (*Ranadive, Sharma, Khan, 2019*) who conducted study entitled "knowledge and expressed practices of dietary regulation among chronic renal failure patients undergoing hemodialysis" and reported that more than two thirds of the studied sample had hypertension as a chronic disease. While, (*Jebraeily and Makhdoomi, 2018*) reported that hypertension was the most common cause of CRF among the studied patients. Also, (*Hara et al., 2018*) who conducted study entitled "influence of arteriovenous fistula on daily living behaviors involving the upper limbs in hemodialysis patients" and mentioned that less than half of

the studied sample had diabetes mellitus as a cause of kidney disease.

The present study shows that there is highly statistically differences between before and after renal transplantation in physical needs score ($P = 0.000$) the mean \pm SD is (2.3 ± 0.5) before and (1.3 ± 0.5) after renal transplantation, the median (IQR) 2(2-3) before, and 1(1- 2) after transplantation. This result is in agreement with (*Sadat et al., 2019*) in study entitled "Effect of Renal Transplantation on Health – Related Quality of life in patients with End Stage Renal Disease" A Quasi – Experimental study showed that high statistically significant differences between ESRD and after renal transplantation in physical function ($p < 0.0001$) but he did not clarify what is meant by physical function.

In agreement with (*Sadat et al., 2019*) study entitled "Quality of life and spirituality of patients with chronic kidney disease: pre- and post-transplant analysis" which reported significant improvement in physical function after kidney transplant.

The present study is in the same line with (*Von der lipp et al., 2014*) in the study entitled "From dialysis to transplantation: a 5-year longitudinal study on self-reported quality of life" revealed that the kidney specific 'overall health' item improved after renal transplantation, from 58 ± 20 to 68 ± 21 respectively, ($p < 0.001$). In the generic domains, significant improvement was observed in limitation due to physical problems, vitality general health and social function. It is worth noting that they evaluate the studied patient in effect of kidney disease, burden of kidney disease, symptoms, sleep, sexual function and work improved.

Conclusion:

Based on the findings of current study, it can be concluded that: Improvement in the health needs after transplantation, so there is highly statistically significant reduction in needs assessment scores after renal transplantation such as (physical, psychological, social, spiritual) needs and in general health domains as basic ADL activities, moderate ADL

activities, exercises, diet and pain. Also., there is statistically significant moderate positive correlation between social need score with physical score and its domains (general health, exercise and pain). While spiritual need score is statistically significant moderate positive correlated with social and psychological needs scores.

Recommendations:

Based on the current study findings, the following recommendations are suggested:

- The patients must be informed to follow up renal programmed visits on renal transplantation clinic as schedule for caring with graft (renal transplanted kidney) after renal transplantation
- Arabic colored booklet regarding steps and guidelines about transplantation should be available in each dialysis hall and renal transplant clinics given to each HD patient to be engaged early in the renal transplant process before health deterioration on HD.
- More studies researches done in different types of needs before and after transplantation and assess which need more effected on patients.
- More comparative studies done between physical, psychological, social, spiritual needs before and after transplantation.
- An orientation program should be prepared for patients undergoing renal transplantation.
- Continuously regular in-service training and educational programs or refresher courses about renal transplantation should be conducted for the nurses in RT & HD unit to inform patients about others treatment not only HD.

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