

Determination of the Levels of Follow-up Standards of Kidney Transplant Recipients in Baghdad Teaching Hospitals

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Abstract- Objective(s): The present study aims at determining the levels of follow-up standards of kidney transplant recipients in Baghdad Teaching Hospitals.

Methodology: A descriptive design using the evaluation approach is conducted on outpatients clinics renal transplant recipients (RTRs) for the period of February 23rd 2015 to August 1st 2016. The present study is carried out at two Teaching Hospitals; Medical City and Al-Karama Hospital's out-patients clinics of renal transplantation recipients (RTR) in Baghdad City. A non-probability (purposive) sample of (100) Renal transplantation recipients, who are attending the kidney transplantation outpatients' clinics, is selected for the purpose of the present study. The sample is comprised of (81) Males and (19) Females. A questionnaire, of (3) parts, is designed and constructed to evaluate the phenomenon underlying the present study. Part I is comprised of (9) items that measures the demographic characteristics; Part II is comprised of (7) items that measures the medical information; and Part III that is comprised of (64) items that measure the domains of the follow-up standards of kidney transplant recipients. Split-half internal consistency reliability, using Cronbach alpha correlation coefficient of $r=0.71$, is employed for the study instrument and content validity of the study instrument is determined through panel of (14) experts throughout a pilot study. Data are collected through the Utilization of the constructed questionnaire and interview technique, with the renal transplant recipients who are attending the outpatients' clinics in the selected Teaching Hospitals, as means of data collection. Each interview takes approximately (45) minutes. Data are analyzed through the application of descriptive statistical data analysis approach which includes frequencies, percentages, mean of scores, total scores and Cronbach alpha correlation coefficient. Body mass index (BMI) is a simple index of weight-for-height that is commonly used to classify overweight and obesity. It is defined as a person's weight in kilograms divided by the square of his height in meters (kg/m^2).

Results: The study indicates that the determination of follow-up standards is fair for the kidney transplant recipients. The kidney transplant recipients have experienced limitations relative to items of the domains of the follow-up standards of medical and clinic visits, signs and symptoms of rejection, physical activity, and poor level of follow-up standards relative to the domains of screening methods of malignant neoplasm..

Conclusion: The study concludes that the majority of the kidney transplant recipients have experienced good level of follow-up standards of infection control and prevention,

laboratory tests, medications, diet and personal hygiene. Most of the kidney transplant recipients have experienced fair level of follow-up standards of medical and clinic visits, signs and symptoms of rejection and physical activity. The majority of the kidney transplant recipients have experienced poor level of follow-up standards relative to the domains of screening methods of malignant neoplasm.

Recommendations: The study recommends that Intensive assessment of patients before and after transplantation should be done to identify their needs relative to the follow-up standards. Well-structured education program on the domains of the follow-up standards can be present to kidney transplant recipients in order to increase their awareness concerning these issues. As previous research is limited in the area, the results from this study might provide valuable guidance for clinical practice and future research. Nationwide research studies can be conducted on large sample size and series of characteristics.

Index Terms- Determination, Follow-up Standards, Kidney Transplant Recipients

I. INTRODUCTION

End stage renal disease (ESRD), as a growing worldwide public health problem, occurs when the kidneys can no longer function adequately for an individual's daily life. ESRD is considered the last stage of chronic kidney disease (CKD), in which only approximately 10% of kidney function remains⁽¹⁾. Patients with ESRD need medical treatment to survive, such as dialysis or a kidney transplant⁽²⁾.

Kidney transplantation is an important life-saving option available to patients with end-stage renal disease⁽³⁾. A kidney transplant is not a cure; it is a treatment. A kidney transplant is when a kidney is removed from one person (called a donor) and surgically placed into another person (called a recipient). Many people prefer a transplant because of the benefits it provides⁽⁴⁾.

Whilst a transplant is not a cure for renal (kidney) failure, it does allow patients to live a more "normal" life than that experienced on dialysis. Patients with a well-functioning transplant have a greater sense of well-being and are able to enjoy a lifestyle free of dialysis treatments, although they must continue with their transplant medications⁽⁵⁾.

Kidney transplantation prolongs life, reduces morbidity, improves quality of life, enables social and medical rehabilitation, and reduces the costs associated with the medical

care of patients with ESRD⁽⁶⁾. Renal transplant also offers the opportunity for an improved quality of life with greater social independence and worth. In addition, many patients can return to work and therefore have a lower dependency on state support⁽⁷⁾.

According to data reported from the Ministry of Health, in Iraq, there are a growing number of patients who receive renal transplantation⁽⁸⁾. So, it is so important to initiate follow-up standards to grantee the long-term survival and maintain acceptable quality of life for renal transplantation recipients.

As a matter of fact, the present study ought to determine the levels of the follow-up standards of kidney transplant recipients in Baghdad Teaching Hospitals.

II. METHODOLOGY

A descriptive design using the evaluation approach is conducted on outpatients clinics renal transplant recipients (RTRs) for the period of February 23rd 2016 to August 1st 2016.

The present study is carried out at two Teaching Hospitals; Medical City and Al-Karama Hospital's out-patients clinics of renal transplantation recipients (RTR) in Baghdad City.

A non-probability (purposive) sample of (100) Renal transplantation recipients, who are attending the kidney transplantation outpatients' clinics, is selected for the purpose of the present study. The sample is comprised of (81) Males and (19) Females.

A questionnaire, of (3) parts, is designed and constructed to evaluate the phenomenon underlying the present study. Part I is comprised of (9) items that measures the demographic characteristics; Part II is comprised of (7) items that measures the medical information; and Part III that is comprised of (64) items that measure the domains of the follow-up standards of kidney transplant recipients. Split-half internal consistency reliability, using Cronbach alpha correlation coefficient of $r=0.71$, is employed for the study instrument and content validity of the study instrument is determined through panel of (14) experts throughout a pilot study.

Data are collected through the Utilization of the constructed questionnaire and interview technique, with the renal transplant recipients who are attending the outpatients' clinics in the selected Teaching Hospitals, as means of data collection. Each interview takes approximately (45) minutes.

Data are analyzed through the application of descriptive statistical data analysis approach which includes frequencies, percentages, mean of scores, total scores and Cronbach alpha correlation coefficient; and inferential statistical data analysis approach which includes analysis of variance (ANOVA) and t-

Test. Total of scores is calculated for the determination of the goodness of the follow-up standards as **good** (150 – 192), **fair**(107 – 149.5), and **Poor**(64 – 106.5). Mean of scores is measured as highly Significant (M.S=2.34- 3), Significant (M.S= 1.67 – 2.33), and not Significant (M.S= 1 – 1.66). Body mass index (BMI) is a simple index of weight-for-height that is commonly used to classify overweight and obesity. It is defined as a person's weight in kilograms divided by the square of his height in meters (kg/m²). There are values listed below to show the BMI classification⁽⁹⁾:

Table (1): Classification of Body Mass Index (BMI) (kg/m²)

From up to	
18.5	Underweight
18.5	25.0 normal weight
25.0	30.0 overweight
30.0	35.0 class I obesity
35.0	40.0 class II obesity
40.0	class III obesity

III. RESULTS

The results of the study are presented with regard to the study objective as follows:

Table (2): Determination of Follow-up Standards of Kidney Transplant Recipients

Determination of Follow-up Standards	F	%
Good (150 – 192)	21	21
Fair (107 – 149.5)	79	79
Poor (64 – 106.5)	0	0
Total	100	100.0

F: Frequency, %: Percentage

This table shows that the determination of follow-up standards is fair for the kidney transplant recipients (79%) and only (21%) is good.

Table (3a): Levels of Medical and Clinic Visits of Follow-up Standards

Levels Standards	Good (13 – 15)		Fair (9 – 12)		Poor (5 – 8)	
	F	%	F	%	F	%
Medical and Clinic Visits	12	12	51	51	37	37

F: Frequency, %: Percentage

This table indicates a fair level of follow-up standards regarding medical and clinic visits domain (51%).

Table (3b): Mean of Scores on Items of Medical and Clinic Visits of Follow-up Standards

List	Standards	Always	Sometimes	Never	M.S	Sig.
1	I visit renal transplantation advisory clinic on regular basis.	90	7	3	2.87	H.S
2	I visit an ophthalmologist on a regular basis.	11	22	67	1.44	N.S
3	I visit the dentist every six months.	8	22	70	1.38	N.S
4	I visit dermatologist when I notice any abnormal sign.	44	16	40	2.04	S
5	I periodically do checkup for the digestive system when I notice abnormal sign.	34	12	54	1.80	S
Total					1.91	S

M.S: Mean of Score, Sig.: Significance, H.S: High Significant (M.S=2.34- 3), S: Significant (M.S= 1.67 – 2.33), N.S: Not Significant (M.S= 1 – 1.66)

This table reveals that the total of the mean of scores on items of medical and clinic visit follow-up standards is significant which is indicating that visiting renal transplantation clinic are highly significant while visiting ophthalmologist and dentist are not significant among the kidney transplant recipients. But, visiting digestive system clinic and dermatologist is significant.

Table (4a): Levels of Infection Control and Prevention of Follow-Up Standards

Levels Standards	Good (13 – 15)		Fair (9 – 12)		Poor (5 – 8)	
	F	%	F	%	F	%
Infection Control and Prevention	78	78	19	19	3	3

F: Frequency, %: Percentage

This table depicts good follow-up standards regarding infection control and prevention (78%).

Table (4b): Mean of Scores on Items of Infection Control and Prevention of Follow-up Standards

List	Standards	Always	Sometimes	Never	M.S	Sig.
1	I avoid crowded places.	73	21	6	2.67	H.S
2	I wear a face mask in dusty places (the first three months).	83	14	3	2.80	H.S

3	I avoid people with common cold.	94	4	2	2.92	H.S
4	I am staying away from exposure to sunlight.	66	32	2	2.64	H.S
5	I am staying away from wet places and air current.	59	26	15	2.44	H.S
Total					2.69	H.S

M.S: Mean of Score, Sig.: Significance, H.S: High Significant (M.S=2.34- 3), S: Significant (M.S= 1.67 – 2.33), N.S: Not Significant (M.S= 1 – 1.66)

This table reveals that all mean of scores on items of follow-up standards for preventing and controlling infection are highly significant among recipients of kidney transplantation.

Table (5a): Levels of Laboratory Tests of Follow-up Standards

Levels Standards	Good (17 – 21)		Fair (12 – 16.5)		Poor (7 – 11.5)	
	F	%	F	%	F	%
Laboratory Tests	85	85	14	14	1	1

F: Frequency, %: Percentage

This table reveals good follow-up standards concerning laboratory tests for those with renal transplantation (85%).

Table (5b): Mean of Scores on Items of Laboratory Tests of Follow- Up Standards

List	Standards	Always	Sometimes	Never	M.S	Sig.
1	I periodically check renal functions tests.	97	2	1	2.96	H.S
2	I check lipid profile and cholesterol.	73	19	8	2.65	H.S
3	I do virology test.	52	21	27	2.25	S
4	I do blood hemoglobin test.	94	4	2	2.92	H.S
5	I do urine test.	97	2	1	2.96	H.S
6	I do blood sugar test.	91	4	5	2.86	H.S
7	I check liver enzyme periodically.	35	20	45	1.90	S
Total					2.64	H.S

M.S: Mean of Score, Sig.: Significance, H.S: High Significant (M.S=2.34- 3), S: Significant (M.S= 1.67 – 2.33), N.S: Not Significant (M.S= 1 – 1.66)

This table shows that there is highly significant mean of scores on all items of follow-up standards of laboratory tests except that of virology test and liver enzyme test which are significant among recipients of kidney transplantation.

Table (6a): Levels of Signs and Symptoms of Rejection of Follow-up Standards

Levels Standards	Good (13 – 15)		Fair (9 – 12)		Poor (5 – 8)	
	F	%	F	%	F	%
Signs and Symptoms of Rejection	11	11	64	64	25	25

F: Frequency, %: Percentage

This table indicates fair follow-up standards concerning sign and symptoms of rejection after renal transplantation (64%).

Table (6b): Mean of Scores on Items of Signs and Symptoms of Rejection of Follow-up Standards

List	Standards	Always	Sometimes	Never	M.S	Sig.
1	I do measure the body temperature when feeling fever.	43	32	25	2.18	S
2	I do measure blood pressure on a regular basis.	61	36	3	2.58	H.S
3	I do measure weight once in a while.	52	44	4	2.48	H.S
4	I do measure fluid intake and output.	11	19	70	1.41	N.S
5	I follow up signs and symptoms of rejection.	8	26	66	1.42	N.S
Total					2.05	S

M.S: Mean of Score, Sig.: Significance, H.S: High Significant (M.S=2.34- 3), S: Significant (M.S= 1.67 – 2.33), N.S: Not Significant (M.S= 1 – 1.66)

The findings of this table reveal that there is significant mean of scores on items of measuring body temperature and highly significant ones of measuring blood pressure and body weight while it is not significant on items of measuring fluid intakes and following up signs and symptoms of rejection after transplantation.

Table (7a): Levels of Medications of Follow-up Standards

Levels Standards	Good (11 – 12)		Fair (7 – 9.5)		Poor (4 – 6.5)	
	F	%	F	%	F	%
Medications	90	90	10	10	0	0

F: Frequency, %: Percentage

This table reveals a good follow- up standards of medications after renal transplantation (90%).

Table (7b): Mean of Scores on Items of Medications of Follow-up Standards

List	Standards	Always	Sometimes	Never	M.S	Sig.
1	I receive medications from specialized hospital in full.	96	2	2	2.94	H.S
2	I purchase medications in case of non-availability in specialized hospitals.	95	3	2	2.93	H.S
3	I take medications daily at the right time and right dose.	96	4	0	2.96	H.S
4	I know the side effects of the drugs.	9	39	52	1.57	N.S
Total					2.60	H.S

M.S: Mean of Score, Sig.: Significance, H.S: High Significant (M.S=2.34- 3), S: Significant (M.S= 1.67 – 2.33), N.S: Not Significant (M.S= 1 – 1.66)

This table reports that there is highly significant mean of scores on all items of the domain of medications of follow-up standards after renal transplantation except that of knowing the side effects of drugs which is not significant among kidney transplant recipients.

Table (8a): Levels of Diet of Follow-up Standards

Levels Standards	Good (27 – 33)		Fair (19 – 26)		Poor (11 – 18)	
	F	%	F	%	F	%
Diet	89	89	10	10	1	1

F: Frequency, %: Percentage

This table depicts good level of follow-up standards of diet after renal transplantation (89%).

Table (8b): Mean of Scores on Items of Diet of Follow-up Standards

List	Standards	Always	Sometimes	Never	M.S	Sig.
1	I take 5-6 small meals from diet on regular daily base.	21	36	43	1.78	S
2	I avoid food containing sugar, such as date, syrup, and sweets.	69	28	3	2.66	H.S
3	I take multiple meals containing the vegetables and fruits with high fibers.	67	11	2	2.85	H.S
4	I avoid food containing high salt, such as canned, olive, & pickles.	87	9	4	2.83	H.S
5	I wash fruits and vegetables well before eating them.	90	5	5	2.85	H.S
6	I avoid taking food outside of home.	97	2	1	2.96	H.S

7	I drink milk and eat eggs and cheese.	67	29	4	2.63	H.S
8	I avoid taking soft drinks.	47	35	18	2.29	S
9	I avoid taking too much meat and fish.	82	11	7	2.75	H.S
10	I avoid food containing high fat, such as grease and butter.	82	15	3	2.79	H.S
11	I drink water on average 6 of glass a day.	97	1	2	2.95	H.S
Total					2.67	H.S

M.S: Mean of Score, Sig.: Significance, H.S: High Significant (M.S=2.34- 3), S: Significant (M.S= 1.67 – 2.33), N.S: Not Significant (M.S= 1 – 1.66)

This table depicts that there is highly significant mean of scores on items of the domain of diet of follow-up standards, but it is significant on the item of eating small frequent meals and avoiding soft drinks.

Table (9a): Levels of Personal Hygiene of Follow-up Standards

Levels Standards	Good (17 – 21)		Fair (12 – 16.5)		Poor (7 – 11.5)	
	F	%	F	%	F	%
Personal Hygiene	99	99	1	1	0	0

F: Frequency, %: Percentage

This table shows that follow-p standards concerning personal hygiene are good (99%) among recipients of renal transplantation.

Table (9b): Mean of Scores on Items of Personal Hygiene of Follow-Up Standards

List	Standards	Always	Sometimes	Never	M.S	Sig.
1	I wash hands with soap and water before and after eating meals.	99	0	1	2.98	H.S
2	I wash hands with soap and water before and after using toilet.	98	1	1	2.97	H.S
3	I wash hands with soap and water before and after having medications	97	3	0	2.97	H.S
4	I do change my under wear daily.	80	20	0	2.80	H.S
5	I do wash my hair with shampoo.	78	22	0	2.78	H.S
6	I do clean my teeth after meals.	66	33	1	2.65	H.S
7	I clean the genital area daily in a healthy way from the front to back after using toilet.	86	13	1	2.85	H.S
Total					2.86	H.S

M.S: Mean of Score, Sig.: Significance, H.S: High Significant (M.S=2.34- 3), S: Significant (M.S= 1.67 – 2.33), N.S: Not Significant (M.S= 1 – 1.66)

This table refers for high significant among all items of follow-up standards regarding personal hygiene after renal transplantation.

Table (10a): Levels of Physical Activity of Follow-up Standards

Levels Standards	Good (23 – 27)		Fair (16 – 22)		Poor (9 – 12)	
	F	%	F	%	F	%
Physical Activity	0	0	63	63	37	37

F: Frequency, %: Percentage

This table shows that follow-up standards are fair with respect to physical activity standards (63%).

Table (10b): Mean of Scores on Items of Physical Activity of Follow-Up Standards

List	Standards	Always	Sometimes	Never	M.S	Sig.
1	I do exercise walking on regular base.	57	33	10	2.47	H.S
2	I avoid heavy lifting.	78	15	7	2.71	H.S
3	I stop continuing exercise when I have pain in shoulder area	4	49	47	1.57	N.S
4	I stop continuing exercise when I have pain in legs.	5	55	40	1.65	N.S
5	I stop continuing exercise when I have pain in hands.	8	50	42	1.66	N.S
6	I do returning to work.	9	45	46	1.63	N.S
7	I am driving a car.	12	29	59	1.53	N.S
8	I have sexual activity.	9	44	47	1.62	N.S
9	I use contraceptive (2) years after renal transplant.	20	42	38	1.82	S
Total					1.85	S

M.S: Mean of Score, Sig.: Significance, H.S: High Significant (M.S=2.34- 3), S: Significant (M.S= 1.67 – 2.33), N.S: Not Significant (M.S= 1 – 1.66)

This table reveals highly significant mean of scores on items of walking and avoiding heavy lifting, and only significant for using contraceptive among female recipients. The remaining items are not significantly reported.

Table (11a): Levels of Screening Methods of Malignant Neoplasm of Follow-up Standards after Renal Transplantation

Levels Standards	Good (27 – 33)		Fair (19 – 26)		Poor (11 – 18)	
	F	%	F	%	F	%
Screening Methods	1	1	7	7	92	92

F: Frequency, %: Percentage

This table indicates poor follow-up standards regarding screening methods of malignant neoplasm after renal transplantation (92%).

Table (11b): Mean of Scores on Items of Screening Methods of Malignant Neoplasm of Follow-up Standards

List	Standards	Always	Sometimes	Never	M.S	Sig.
1	I do perform monthly self-examination of skin and lips	6	4	90	1.16	N.S
2	I do annual examination of skin, conjunctiva, and pharyngeal mucosa by a physician.	7	7	86	1.21	N.S
3	I do early referral to a dermatologist for all suspicious skin lesions.	8	4	88	1.20	N.S
4	I do annual examination of genital area, including pelvic examination.	4	3	93	1.11	N.S
5	I do prompt referral for and treatment of venereal warts.	56	8	36	2.20	S
6	I do annual cervical cytological examination (Pap test).	16	11	73	1.43	N.S
7	I do mammography every (1-2) year in women between age 50 and 70 years	6	0	94	1.12	N.S
8	I do annual digital rectal examination of the prostate gland in men older than 50 years	2	2	96	1.06	N.S
9	I do consideration of prostate specific antigen testing in men older than 50 years	4	4	92	1.12	N.S
10	I do annual fecal occult blood testing in patients older than 50 years old	4	1	95	1.09	N.S
11	I do flexible sigmoidoscopy or colonoscopy every 5 years in patients older than 50 years.	3	1	96	1.07	N.S
Total					1.25	N.S

M.S: Mean of Score, Sig.: Significance, H.S: High Significant (M.S=2.34- 3), S: Significant (M.S= 1.67 – 2.33), N.S: Not Significant (M.S= 1 – 1.66)

This table refers that there is no significant mean of scores on all items of screening methods standards except that of treatment of venereal warts which is significant.

IV. DISCUSSION

Part I: Discussion of the Determination of the Levels of Follow-up Standards

Throughout the course of data analysis, the study findings present that more than two third of the kidney transplant recipients have experienced fair level of follow-up standards (79%) (Table 2). These findings provide evidence that these recipients may experience some limitations relative to the follow-up standards. Such limitations are concerned with items for the domains of the follow-up standards of medical and clinic visits, signs and symptoms of rejection, physical activity, and poor level of follow-up standards relative to the domains of screening methods of malignant neoplasm.

It has been documented that within one to two months after receiving a new kidney, most recipients recover fully, return to work, and resume a normal, active life. At first, they need to see their doctors quite often for follow-up visits, and they will be monitored carefully to make sure the new kidney is functioning properly. They will continue to work closely with the transplant surgeon and nephrologist, the coordinator, and members of the social services team. The local physician will remain a key member of the care-giving team, playing an active role in the recovery⁽¹⁰⁾.

In a descriptive study that aims at assessing the compliance of kidney transplant recipients to the recommended life style behaviors in Mansoura, Egypt. One hundred kidney transplant patients are questioned on their compliance with the recommended lifestyle behaviors including transplant medications, preventing from infections, diet, exercise, regular medical visits, personal hygiene, sexual activity, and cancer prevention. The results indicate that most of the kidney recipients are compliant with the immune-suppressants. One-third of the participants are compliant with low-salt diet. Noncompliance with annual dental and eye checkup is reported in the majority of the subjects (94.0%). Compliance with infection prevention is

partial. Half of the patient has a poor compliance with exercise or are not complying with the recommendations at all. Only (9.0%) of the patients are avoiding sun exposure. The majority of women were not compliant with breast self-examination. One-third of the patients consulted with their nephrologists about their sexual problems, and only half of the women are compliant with family planning program. The women are less compliant than men with medications ($P \leq .02$), and poor compliance with medications is more frequent among those with living unrelated donors ($P \leq .04$). The study concludes that the kidney transplant patients have good compliance with immunosuppressive medications, but not with most of the recommended behaviors. Intensive assessment of patients before and after transplantation should be done to identify their needs which help planning to improve their compliance⁽¹¹⁾.

Part II: Discussion of the Domains of the Follow-up Standards

Analysis of the domains of the follow-up standards indicate the kidney transplant recipients have fair level (51%) regarding to the domain of medical and clinic visits follow-up standards (Table 3a). Such significant level is manifested by the mean of scores on items of this domain which is totally significant (Table 3b). The recipients have experienced poor level of follow-up standards relative their regular visit to the ophthalmologist and every six months visit to the dentist.

It has been reported in the literature that before leaving the hospital, the recipients receive a schedule of follow-up clinic visits for checkups. The purpose of these important visits is to track your recovery progress and detect any potential complications as early as possible⁽¹⁰⁾.

Concerning the domain of infection control follow-up standards, the findings of the study have revealed that most of the recipients have experienced good level of follow-up standards (78%) (Table 4a). Such good level is presented in the mean of scores of all items of this domain which are highly significant (Table 4b).

In general, kidney transplant recipients are susceptible to a greater number of infections that often present with greater severity than the general population, due to their chronically immunosuppressed state. Given that the signs and symptoms of infection are often atypical in the kidney transplant recipient, routine surveillance strategies have been developed by Transplant Centers for a number of commonly encountered infections post-transplant. Since the fields of transplant immunosuppression and infectious disease evolve rapidly, with an individual's susceptibility to various pathogens and management strategies that differ from region-to-region and center-to-center, it is necessary for Transplant Centers to communicate their expectations for the standard of care for infectious disease issues to Primary Providers⁽¹²⁾.

With respect to the domain of laboratory tests, the study has indicated that the majority of these recipients have experienced good level (85%) of this domain (Table 5a). This good level is noted in the mean of scores on items of laboratory tests of follow-up standards which significant and highly significant on all items (Table 5b).

The laboratory tests that they are performed to monitor blood counts, kidney function, liver function, electrolytes, and the

medication levels in your blood. Other tests may be ordered as necessary⁽¹³⁾.

With regard to the domain of signs and symptoms of rejection follow-up standards, the findings depict that most of the recipients have experienced fair level of such domain (64%) (Table 6a). This fair level has emerged due to the non-significant items of measuring fluid intake and output, and following up signs and symptoms of rejection (Table 6b).

Even with the use of immune-suppressants, the body can at times recognize your transplanted organ as a foreign object and attempt to protect you by attacking it. Despite immunosuppression medications, (10%-20%) of patients will experience at least one episode of rejection. Most rejections are mild and easily treated by making adjustments to immunosuppression medication dosages. Rejection occurs most often in the first six months after transplant. The chance of rejecting the new kidney decreases with time, but rejection can occur at any time after transplant. Most rejection episodes do not have symptoms and are usually picked up through routine blood work. However, if symptoms do occur, the most common signs of rejection are⁽¹⁴⁾:

1. Flu-like symptoms
2. Fever of 101° F or greater
3. Decreased urine output
4. Weight gain
5. Pain or tenderness over transplant
6. Fatigue

There are other signs of rejection that can only be detected by routine blood testing. This is why we frequently draw blood during your hospitalization and at your follow-up clinic visits. In addition, a kidney biopsy is almost always necessary to determine if rejection is actually occurring. The management of a rejection episode is by making adjustments to the medication dosages. Treatment of rejection usually requires a few days of hospitalization, allowing us to administer alternative immune-suppressants and observe your progress.

Relative to the domain of medications of follow-up standards, data analysis presents that the majority of the recipients have experienced good level of follow-up standards of medications (90%) (Table 7a). Such finding has emerged due to the fact that the mean of scores on items is highly significant on all items except that of knowing the side effects of drugs which is not significant (Table 7b).

The immune system recognizes and attacks anything different from the substances normally present in the body, even those only slightly different, like the newly transplanted kidney. The immune system does not discriminate between harmful substances, like bacteria, fungi and viruses, and transplanted organs — so your immune system responds to your new kidney as a foreign substance that needs to be eliminated. In order to protect the new kidney, a variety of medications will be prescribed to suppress the body's natural immune response. These medications are called "immune-suppressants," and they trick the immune system into believing that your new organ is not foreign, and thus it is not attacked. After transplantation, the immunosuppressant medications will be taken for the rest of the life. The key to maintaining a successful transplant for the rest of the life is taking the immunosuppressant medications prescribed to the recipients. Initially it may seem a little overwhelming, but

in time you will become very comfortable with the routine. It is important to take your medications as you are instructed. The recipients will become responsible for taking their own medications⁽¹⁵⁾.

Immunosuppression regimens and protocols are in a continued state of evolution. For this reason, decisions regarding immunosuppressive regimens should be made by one designated care provider to prevent confusion in management. Together with the patient, the Transplant Center should decide who will be the decision maker for the patients' immunosuppression. This will be in many cases the Transplant Center itself but in other cases the Transplant Center might assign a Primary Provider to take over decision-making power for long-term immunosuppression. The decision to assign a different care provider should be consensual with the patient and only after agreement with the Transplant Center, taking into consideration the designated care providers' qualifications to follow long-term immunosuppression⁽¹²⁾.

If immunosuppression management is to be performed by a Primary Provider outside the Transplant Center, the Transplant Center should provide the following recommendations at the time of transfer of care⁽¹²⁾:

1. Therapeutic drug monitoring schedule and goals.
2. Past and current side effects of immunosuppression experienced by the patient.
3. Any prior immunosuppression changes and rationale.
4. Recommendations for periodic updates on the progress of the patient from the Primary Provider to the Transplant Center (at least yearly, ideally the Transplant Center should be copied on all clinic visit notes and laboratory assessments).
5. Considerations in immunosuppression management should take into account the lifetime history of both patient and graft and have complete clinical and laboratory data available to aid the complicated decision making process of long term immunosuppression.
6. Care can be transferred to a different Primary Provider or to the Transplant Center at any time, but care provider changes should be minimized to ensure continuity of care.
7. The Transplant Center should be consulted when designating a new care provider for immunosuppression management.
8. Any condition in which there is a significant change in medical condition or major inter-current illness that may warrant changes in immunosuppression should be considered an indication for Transplant Center consultation and management.

Regarding the domain of diet as follow-up standard, the findings depict that the majority of the recipients have experienced good level of diet as follow-up standard (89%)(Table 8a). This can be interpreted in a way that the recipients have appropriately followed-up the standard of diet which is very obvious in the highly significant and significant mean of scores on items of diet (Table 8b).

Good nutrition plays a key role in successfully recovering from kidney transplantation. As after any surgery, adequate calories and protein are needed for proper wound healing. Also, possible side effects of the anti-rejection medications can

increase nutrient requirements. Because of these special concerns, the recipients may have to change their diet for a time period after the transplant. However, dietary therapy is always adjusted by the transplant team to meet the specific needs and tolerances⁽¹⁶⁾.

After the successful kidney transplant, compared to being on dialysis the recipients will have a lot more freedom with their diet. However, it is very important to have a healthy well balanced diet to help protect the new kidney. When the recipients go home, they become the most important member of the transplant team. Depending on how well the new kidney is working the recipients may need to continue to restrict certain foods for a short time. Once the kidney is working well there is no longer need to be on a special diet but it is important that the recipients still watch what they eat and have a healthy balanced diet. This is particularly important as the transplant medications can increase the blood pressure, cholesterol and blood sugar levels. These medications can also weaken the bones so the recipients need to have a good intake of calcium and vitamin D⁽¹⁷⁾.

Concerning the domain of personal hygiene as follow-up standard, data analysis has revealed that the vast majority of the recipients have experienced good level of follow-up of personal hygiene (Table 9a). Such good level of personal hygiene follow-up standard is documented in all highly significant mean of scores on items of personal hygiene (Table 9b).

It has been evidenced in the literature that basic measures for preventing infection in post-transplant period are directed towards maintaining the personal hygiene and of the surrounding place. This includes washing hands with soap and water, especially before preparing and eating meals and returning from outdoors; using tissues during coughing or sneezing and disposing them immediately in an appropriate manner; avoiding close contact with someone, whether in the house or from outside, who is known to have cold or signs and symptoms of respiratory tract infection; maintaining food hygiene and sanitation including cooking to proper temperature and proper storage and disposal especially during summer time. One does not have to stay in an isolated room, though avoid being in the same premises if someone is known to have respiratory tract infection⁽¹⁸⁾.

With respect to the domain of physical activity of follow-up standards, The findings indicate that more than half of the recipients have experienced fair level of physical activity of follow-up standards (63%)(Table 10a). This fair level has emerged due to the non-significant mean of scores on items of the physical activity as domain of follow-up standards (Table 10b).

It has been reported in the literature that exercise improves your overall health. It makes you feel better and can help control stress. Regular exercise can help to maintain a weight that is right for the recipients. It can also help prevent bone disease (osteoporosis). Any physical activity that the recipients can do is beneficial. Walking, swimming, riding a bicycle, lifting weights, playing golf or tennis, participating in yoga classes or even doing housework are counted as exercise! Staying active is key to living a full and healthy life. It is common to feel tired or weak as you recover from kidney transplant. Regular exercise will get the recipients back to a more active routine and help you

eventually return to your home routine, work, or school. Transplant recipients should discuss how to start an exercise program with their doctor and transplant team so that a safe exercise plan can be developed. It is important to talk with your transplant team about increasing your activity level and when to begin an exercise routine. The team can help you develop a plan that is right for them. For the first two to three months after transplant, the recipients may be advised to avoid any strenuous activity, heavy lifting, or more intensive exercise programs. The best activity in the first few weeks after transplant is walking. Most centers recommend that any activities or sports with a high risk of injury like football, wrestling, skiing, water skiing, or motorcycling, should be avoided for at least one year after transplant. Some centers restrict contact sports indefinitely. To be healthy and fit is an important goal, but using common sense to reach this goal is just as important. Even months or years after the transplant, exercising when the recipients are sick with a fever is not a good idea. If the recipients have experienced any intense pain, chest pain, or shortness of breath while exercising, they should stop exercising immediately and seek medical attention or advice⁽¹⁹⁾.

Analysis of the domain of screening methods of malignant neoplasm of follow-up standards after renal transplantation, the study reveals that the majority of the recipients have experienced poor level of follow-up concerning this domain (92%)(Table 11a). This finding is manifested in the not-significant mean of scores on items of such domain except that in which they do prompt referral for and treatment of venereal warts which is not significant (Table 11b).

Renal transplant recipients should be screened for solid organ malignancy in an age appropriate manner following the guidelines of the American Cancer Society for the general population. Due to the significantly increased risk for skin cancer, all patients should have a yearly skin examination and patients with a history of skin cancer should have follow-up more frequently as indicated. Patients who have received prior treatment with chemotherapeutic agents such as cyclophosphamide or who have a history of analgesic nephropathy are at increased risk for urogenital malignancies. Urologic evaluation should be performed in these recipients in all cases of new onset micro hematuria. Female renal transplant recipients have a higher risk for cervical, vaginal, and perineal carcinoma and should have yearly pelvic exams and PAP smears, including patients who have undergone total hysterectomies. Lymphomas including PTLD should be considered in all individuals with clinical symptoms suggesting organ involvement. Hepatitis B carriers and Hepatitis C with advanced fibrosis—every 6 month abdominal ultrasound and serum alpha fetoprotein levels. The occurrence of all cancers in the renal transplant recipient should be reported to the transplant center as soon as they are identified⁽¹⁹⁾.

Conclusion:

Based on the interpretation and discussion of the study findings, the study can conclude that:

1. The majority of the kidney transplant recipients have experienced good level of follow-up standards of infection control and prevention, laboratory tests, medications, diet and personal hygiene.

2. Most of the kidney transplant recipients have experienced fair level of follow-up standards of medical and clinic visits, signs and symptoms of rejection and physical activity.
3. The majority of the kidney transplant recipients have experienced poor level of follow-up standards relative to the domains of screening methods of malignant neoplasm.

V. RECOMMENDATIONS

Based on the early stated conclusion, the present study can recommend that:

1. Intensive assessment of patients before and after transplantation should be done to identify their needs relative to the follow-up standards.
2. Well-structured education program on the domains of the follow-up standards can be present to kidney transplant recipients in order to increase their awareness concerning these issues.
3. As previous research is limited in the area, the results from this study might provide valuable guidance for clinical practice and future research.

Nationwide research studies can be conducted on large sample size and series of characteristics

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