

Biopsychosocial Needs of the Patients Post Renal Transplant

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Abstract

Renal transplantation is the surgical implantation of a human functioning kidney from either living donor or a cadaver into a patient with end-stage renal failure. **Aim of the study:** to assess biopsychosocial needs of patients post renal transplant. **Design:** A descriptive exploratory design was utilized. **Setting:** this study was conducted at out-patient clinics of the National Institute of Nephrology and Urology in Matariya Hospital. **Study subjects:** A Purposive sample including all patients admitted to outpatient clinics in the previous mentioned setting. **Data collection tools:** 1)Patient`s interviewing questionnaire, it includes the following parts, 1) concerned with demographic characteristics of the study subjects (age, gender and marital status),2) Past medical history of patients under study,) Biopsychosocial needs assessment sheet including the following sections: A) Physical needs assessment, B) Psychological needs assessment, C)Social needs assessment, D) Educational needs assessment. **Results:** the study showed that, the common systemic needs among studied patients were cardiovascular system alterations followed by rest and sleep alterations. Regarding daily living activity function, it was found that more than one third of patients under study had severe function impairment. **Conclusion:** this study concluded that, regarding psychological needs, it was found more than one third of study subjects had moderate depression and extremely severe anxiety level. **Recommendation:** the study recommended supportive care services in any hospital care setting should be directed towards meeting biopsychosocial needs of patients post renal transplant.

Key words: biopsychosocial, renal transplant, end stage renal disease

Introduction

Kidney transplantation involves implanting a human functioning kidney from a living donor or a cadaver into a patient with end stage renal disease (ESRD), thus replacing the lost renal function (Smeltzer & Bare, 2014).

The survival of a transplanted kidney depends on the ability to block the body`s immune response to the

transplanted kidney. To overcome or minimize the body`s defense mechanism, immunosuppressive agents are administered. These drug must be taken for the rest of the recipient`s life and can cause some undesirable side effects and change in the whole life style of the patient (Shapiro, Richard and Tomas, 2017).

The risk of infection is significant for those patients, not only from treatment related immunosuppressive but also from

the defective immune response that results from the disease itself. Patients need to be taught to minimize the risk of infection to recognize signs of possible infection and to contact the health professionals (*Smeltzer, Bare & Hinkle, 2010*).

End stage renal disease is the final stage of chronic renal failure (CRF), it occurs when the kidneys are no longer able to function at a level that is necessary for day to day life. End stage renal disease occurs as CRF progresses to the point where kidney function is less than 10% of baseline. At this point, the kidney function is so low that without renal replacement therapy (RRT), complications are multiple and severe, and death will occur as a result of accumulation of fluids and waste product in the body (*Allrefer, Pretagostini and Poli, et al., 2016*).

Renal transplantation is being performed with increasing frequency as the incidence of ESRD is increasing. The worldwide prevalence of ESRD has increased by approximately 8% per year over the last decade (*Braddome, 2016 and Fisch, 2016*).

Physiological needs, the most basic in the hierarchy of needs, are the most essential to life and therefore have the highest priority. Physiological need such as oxygen, water, food, temperature, elimination, sexuality, physical activity and rest to meet at least minimally to maintain life physiological needs are often a major part of nursing care plan for disabled and ill people who require assistance in meeting them (*Taylor, Lillis and Lynee, 2015*).

Psychological and social problems created by post renal transplant including depression and other emotional problems; lack of information or skills needed to manage the illness; disruption in work and family life cause additional suffering,

weaken adherence to prescribe treatment and threatened patients to return to health (*Epstein & Street, 2017*).

The biopsychosocial needs presumes that it is important to handle the three together as a growing body of empirical literature suggests that patient perceptions of health and threat of disease, as well as barriers in a patient's social or culture environment, appear to influence the likelihood that a patient will engage in health-promoting or treatment behaviors, such as medication taking, proper diet or nutrition and engaging in physical activity (*Hasselder, 2017*).

Significance of the study

In Egypt, the number of people with ESRD continue to rise, accordingly, the number of renal transplantation have been increased, it reached (450-500) per year. The total number of transplants was 8000 (*Baker & Ghoniem 2015*).

It estimated that 19 million people in the United States have (CKD) and over 485,000 people require dialysis or renal transplantation in order to stay alive (*United States Renal Data Systems, 2011*).

Biopsychosocial needs of patients post renal transplant very recommended so, the researcher conduct this study to assess these needs.

Aim of the Study

The aim of this study was to:-

Assess the biopsychosocial needs of patients post renal transplant through:-

- Assess physical needs of patients post renal transplant.
- Assess psychological needs of patients post renal transplant.

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- Assess social needs of patient post renal transplant.
- Assess educational needs of patients post renal transplant.

Research Questions

The current study answered the following questions:

- What are the physical needs of patients post renal transplant?
- What are the psychological needs of patients post renal transplant?
- What are the social needs of patients post renal transplant?
- What are the educational needs of patients post renal transplant?

Subjects and Methods

The study was portrayed under the four main parts as following:

- (A) Technical design
- (B) Operational design
- (C) Administrative design
- (D) Statistical design

1-Technical design

The technical design includes research setting, subject and tools for data collection.

Research design

Exploratory descriptive design was utilized to meet the aim of this study.

Setting

This study will be conducted at outpatient clinics of National Institute of Nephrology and Urology in Matariya Hospital affiliated to Ministry of Health.

Subjects

A Purposive sample including 90 patients admitted to outpatient clinics in the previous mentioned settings.

Inclusion criteria

Patients from both genders who were undergone renal transplant surgery admitted to outpatient clinics after discharge by two weeks and free from any post-operative complications and any signs or symptoms of early rejection and agree to participate in the study.

Tools for data Collection

Data for this study were collected using the following tools:-

1: A patient's interviewing questionnaire it was developed by the researcher to assess needs of patients post renal transplant surgery based on (*Saker,2012, Danovitch, 2012 and Draddom,2016*).It included the following parts:-

Part (1): concerned with demographic characteristics of the study subjects (age, gender, and marital status, level of education and work status and residency).

Part (2): concerned with past medical history of patients under study.

Part (3): concerned with biopsychosocial needs assessment:

It included four categories of patient's needs including:-.

A) Physical needs assessment:-it included the following:

1) Systematic assessment of patients e.g. (nutritional assessment, sleep, rest, respiratory assessment, cardiovascular assessment, activity assessment). It based on (*Nehyart, 2012 and Williamson, Owean and Branne, 2015*).

2) Assessment activities of daily living using Katz index of independence in activities of daily living (ADLS).

B) Psychological needs assessment:-it assessed psychological needs of study subjects using DASS scale (*Gomez et al., 2014*).

C) Social needs assessment: it is a standardized scale adopted from (*Wraa, Waston, White, Baumleand Duncan, 2013*).

E) Educational needs assessment:-it was developed by the researcher after reviewing related and recent literature guided by (*Nehyart, 2012 and Soeyongyo, Warde, Timilshina, Alibha & Fleshner, 2012*).

2-Operational Design:-

The operational design included preparatory phase, pilot study and fieldwork and it include operational definition:-

(1) Post renal transplant in this study means patient underwent renal transplant surgery and minimally had two weeks after discharge.

(2) Biopsychosocial needs in this study means physical, psychological and social needs of the study subject.

A) The preparatory Phase:

It included reviewing of related available literatures and theoretical knowledge of various aspects of this issue in order to develop the data collection tools, using books, article, magazine and internet resources.

B) Validity and reliability:

Testing validity

Content validity carried out to determine whether tools cover its aim through a group of jury of 7 experts in the field of Medical Surgical Nursing at the Faculty of Medical Nursing, Ain Shams University, The study tool reviewed regarding the clarity, relevancy, comprehensiveness and simplicity.

Reliability

It was tested statistically to assure that the tool is reliable before data collection

C) Pilot Study

A pilot study was carried out on a group of patients (10% of the sample) to test applicability of tools and clarity of the designed questionnaire, as well as to estimate the time needed to answer it.

D) Field Work

It included the implementation of the study through:-

Assessment of biopsychosocial needs for patients post renal transplant at National Institute of Nephrology and Urology in Matariya Hospital and the researcher collected data within the period from the beginning of May 2017 to the end of November 2017.

Ethical Considerations

The ethical research considerations include the following:-

The study proposal was approved by the ethical committee of the Faculty of Nursing, Ain Shams University. The researcher clarified the objectives and the aim of the study to patients included in the study before starting. Researcher assured maintain anonymity and confidentiality of patient`s data included in the study.

3- Administrative Design

To carry out the study, the necessary approvals were obtained from the hospital director and nursing director of National Institute for Nephrology and Urology in Matariya Hospital.

Official letters were issued to them from the Faculty of Nursing at Ain Shams University explaining the aim of the study to obtain permission for data collection.

Statistical Design

The data obtained synthesized and statistically analyzed and presented in numbers and percentages in tables, as required and suitable statistical test used to test the significance of result obtained. Data were extracted from the interviewing questionnaire and computerized in Microsoft Excel 2007. Data analyzed was done using software package. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations for quantitative variables. The statistical analysis was done using percentage, range, chi square (X^2); T- test and ANOVA.

Correlation values (R) and P-value represent either:-

*Signifi cant (S) $p < 0.05$

** Highly significant (HS) $P < 0.01$

No star, not significant (NO)
 $P < 0.05$

Result

Table (1): Number and percentage distribution of demographic characteristics of patients under study (N: 90).

Items	N (N= 90)	%
Age		
From 20<40 years	21	23.3%
From 40< 60	31	34.44%
≥60 years	38	42.22%
Mean±SD	52.5±14.53	
Gender		
Male	47	52.2%
Female	43	47.8%
Marital status		
Married	55	61.1%
Single	35	38.9%
Educational level		
Illiterate	19	21.1%
Basic education	32	35.6%
High education	39	43.3%
Occupational status		
No Work\ House wife	42	46.7%
Muscular work	25	27.8%
Sedentary work	23	25.5%
Residence		
Rural	33	36.7%
Urban	57	63.3%
Monthly income		
Sufficient	15	16.7%
Not sufficient	75	83.3%
Smoking:		
Yes	25	27.8%
No	65	72.2%
Home ventilation		
Good	15	61.1%
Not good	35	38.9%
Availability of clean running water		
Yes	53	58.9%
No	37	41.1%

Table (1): this table showed the frequency and percentage distribution of demographic characteristics of patients under study, it was found that 52.2% of the studied patients were males. 42.2% of the patients under study were above the age of sixty with mean age 52.5±14.53. In addition, 61.1% of patients were married and 43.3% were high educated while 27.8% of them had muscular work. Regarding the residence, this table revealed that 63.3% of the studied patients were live in urban areas. Regarding the monthly income, 83.3% of patients under study reported their monthly incomes were not sufficient, while only 16.7% said that it was enough for their treatment cost. Regarding smoking, this study showed that 72.2% of the study subjects were not smokers while 27.8% of them were smoker. Regarding home criteria, 61.1% of patients under study were living in good ventilated home, while 58.9% of them had clean running water

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Table (2): The total mean scores for the physical needs of patients under study (N=90)

Items	Mean	SD	Minimum	Maximum
Respiratory alteration	37.78	21.32	0.00	83.33
Cardiovascular alteration	48.10	13.62	14.29	71.43
Nervous alteration	29.05	18.10	0.00	85.71
Gastrointestinal alteration	27.44	14.42	0.00	60.00
Elimination	22.84	18.04	0.00	55.56
Integumentary alteration	12.22	18.83	0.00	50.00
Rest and sleep alteration	40.89	19.18	0.00	60.00

Table (2): this table showed the total mean scores for the systemic alterations of patients under study, it was found that means of patients numbers had cardiovascular problems was 48.10 ± 13.62 , while means of patients numbers had problem in rest and sleep was 40.89 ± 19.18 . In addition the mean of patients numbers who had respiratory problems was 37.78 ± 21.32

Table (3): Number and percentage distribution of social needs of patients under study regarding to social dysfunction rating scale (N=90).

Items	Mild		Moderate		Severe		Very severe	
	N	%	N	%	N	%	N	%
Social needs	6	6.7%	59	65.6%	21	23.3%	4	4.4%

Table (3): regarding social needs of patients under study, the result revealed that 65.6% of patients under study had moderate social dysfunction, while 23.3% of them had severe social dysfunction.

Table (4): Number and percentages distribution of patients under study regarding to their educational needs regarding renal transplant surgery (N=90).

Items	Satisfactory		Unsatisfactory	
	N	%	N	%
Definition of renal transplant surgery	90	100.0%	0	0.0%
Indication of renal transplant surgery	39	43.3%	51	56.7%
Complication after renal transplant and prevention	86	95.6%	4	4.4%
Warning signs of rejection	69	76.7%	21	23.3%
Perceiving information for patients post renal transplant regarding the following :-				
Infection prevention	70	77.8%	20	22.2%
Nutrition	61	67.8%	29	32.2%
Follow up	88	97.8%	2	2.2%
Medication\side effect\instruction	46	51.1%	44	48.9%
Total	64	71.1%	26	28.9%

Table (4): this table showed that, regarding depression level, 36.7% of patients under study had moderate depression degree, 24.4% of them had severe depression and only 12.2% of them within normal status. Regarding anxiety level, 35.6% of patients under study had extremely severe degree, while 24.4% of them had severe anxiety and 17.8% of patients under study had moderate anxiety. Regarding stress level, 45.6% of patients under study within normal status and 23.3% of them had moderate degree of stress. Regarding educational needs of patients under

study, the results revealed that 71.1% of patients got satisfactory score of knowledge regarding renal transplant surgery, while 28.9% of them got unsatisfactory score of knowledge.

Table (5): correlation between biopsychosocial needs and total mean scores of patients and their educational needs (N=90) .

Items	Patient knowledge	
	R	P-value
Total physical needs	-.374**	0.000
Total social dysfunction rating scale	-.087	.416
DASS scale 21 normalized scale	-.031	.769
KATZ index of independence in activities of daily living	-.293**	.005

Table (5): this table revealed that, there were a negative correlation between patient`s knowledge and their physical, psychological, social needs and total daily living activity(R=-.374,-.087,-.031 and .293) at P-value= .000, 0416, 0769 and .005 respectively.

Discussion

The finding of the present study showed that, less than half of the studied patients were above 60 years at mean+SD 52.5±14.53.

This finding is consistent with *Jofre, Gomez, Noreno, Guajardo and Valderrbano, (2015)*, in a study titled `` *Change in Quality of Life after Renal Transplantation* ``, who reported that the most common age group was from 45-60 years. However this finding is inconsistent with *Baker and Ghoneim (2015)*, in a study titled `` *Rehabilitation of renal transplant recipients* ``, that their sample age ranged from 21-30 years.

Regarding to gender, the findings of this study revealed that 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. Similarly, *Garg, Furth, Firush and Power,(2013)*, in a study entitled `` *Impact of Gender on Access to the Renal Transplant Waiting List for Pediatric and Adult Patients* ``, that adult women

were less likely to be activated for transplant than men. Economic factors such as greater income of men may encourage female to be donors, gender bias on part of physicians or institutions, lack of social support network and difference in health seeking behaviors compared to men are cited as reasons for this imbalance.

In relation to marital status, the result showed that less two thirds of the patients under study were married. This might be due to that most of the study subjects were within 40-60 years 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 (*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 Funfunction* ``, that more than half of their patients were married

Concerning to educational level, the result of this study revealed that more than one third of the patients under study

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had high educational level. **Ricka, Vanreterhem, and Evers. (2015)**, in their study entitled `` *Adequate Self-Care of Transplanted Patients*`, that the majority of their subjects had high degree of educational level. Also **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 slightly less than half of patients under study had no work or house wife. In the same context **El Manzalawy, (2015)**, found that two thirds of their subjects were not working, while **Kring and Crane, (2014)**, who found that the majority of his subjects were working.

In relation to residence, results indicated that more than half of patients under study were from urban areas, this finding are consisted with **American Association of Nephrology Nurses and Technicians, (2016)**, in a study entitled `` *Renal Osteorystropy. American Association of Nephrology Nurses and Technican*`, it was supported that the majority of the patients with renal failure come from urban area and exposed to occupational hazard. This finding is consistent with **El Manzalawy, (2015)**, who reported that more than half of their subjects were from urban area. This finding is inconsistent with **El Saadany, Gheith, Abuo Donia and Salem, (2014)** who reported that the majority of their subjects were from rural areas.

In relation to monthly income of the patients under study, the results 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; this finding was in accordance to **Alexander, Fawcett and Runciman, (2014)**, in a study titled `` *Hospital and Home Chutchill Livingstone*`, that most of his patients hadn't enough income for their treatment.

Regarding to smoking, the finding of the present study revealed that about more than two thirds of patients under study were not smokers, while less than one third of them were smokers. This is due to the patient`s awareness about the effect of smoking on their health before and after transplant. This result is in consistent with **Giacoma, Inngersoll and Williams, (2013)** who reported that the majority of patients post renal transplant were non smoker. This finding is inconsistent with **Besterio, Perez, Hernardez and Canedo, (2014)**, in their study entitled `` *Validity and Reliability of the Questionnaire in Patients on the Waiting List for a Kidney Transplant and Transplant Patient*`, that the majority of the studied subjects were smokers.

Assessment of patient`s physical, psychological, social and educational needs.

Regarding the total mean scores for the physical needs of patients under study, it was found that means of patients numbers had cardiovascular problems was 48.10 ± 13.62 , while means of patients numbers had problem in rest and sleep was 40.89 ± 19.18 . In addition the mean of patients numbers had respiratory problems was 37.78 ± 21.32 .

The researcher opinions are that this result may be due to that the majority of post transplanted patients are physically impaired which hinder their ability to perform ADL; this is consistent with **Sheashaa et al. (2010)**, in a study entitled `` *Factors that affect self-care defecit for patients post renal transplant*`, that cardiovascular system alterations is the most common alterations in his study,

while *Sahota & Chokroverty, (2011)*, in their study entitled `` *Assessment of biopsychosocial needs for patients undergoing liver transplant*`, stated that insomnia and other sleep disturbance were common among patients post renal transplant.

Regarding social needs assessment, the current study revealed that about two thirds of patients under study had moderate social dysfunction, while about one fourth of them had severe social dysfunction. This is consistent with the *Baker,(2014)*,who stated that, the patients post renal transplant and their families face social challenges because of the treatment cost after transplant. Also, *Kreitler, Chaitchik, Rapoport and Algor, (2013)*in a study entitled `` *Life satisfaction and Health in Cancer Patients, Orhtopedic Patients and Healthy Individual*`, that a decline in social interaction is associated with decreased life satisfaction among post transplanted patients

This finding is supported by *Jachobs, (2014) and Redmon, Olson and Armstrong,(2016)* in their study entitled `` *Effect of Tacrolimus on Human Insulin Gene Expression, Insuline in RNA Level and Insuline Secretion*`, that social interaction and activities may be altered post renal transplantation.

Regarding Psychological needs assessment using DASS scale, the current study revealed that, more than one third of patients under study had moderate depression level and extremely severe anxiety level, while less than one fourth of them had moderate stress level.

This result is consistent with *Young and Stiens, (2015)*, in a study entitled `` *Rehabilitation Aspects of Organ Transplantation*`` that there is evidence of depression and anxiety in patients post renal transplant. Also *Alexander, Fawcett and*

Runciman,(2014),in a study entitled `` *Hospital and Home Chutchill Livingstone*``reported that the prevalence of poor psychological and physical well being increase the level of depression in patients post renal transplant.

Regarding Educational needs assessment, the current study revealed that, two thirds of patients under study got satisfactory score of knowledge regarding renal transplant surgery. This finding is could be due to their high educational level and presence of health awareness about disease.

This finding is inconsistent with *Potter, Perry, Stockert & Hall, (2016)*, in their study entitled `` *Assessment of biopsychosocial needs for patients undergoing liver transplant*``that most patients needs information about renal transplant surgery so, the majority of patients suffered from lack of information about the arrangement of treatment and initiating follow -up appointments and tests.

The relation between physical, psychological & social needs and their educational needs.

Moreover, regarding correlations between total biopsychosocial needs mean scores of patients and their educational needs, the study showed that, there were negative correlation between patient`s total biopsychosocial needs (alterations) and their educational needs, which mean that the higher patient`s educational needs, biopsychosocial needs decrease.

This is inconsistent with *Rosen berg, Lawrence & Devita, (2013)*, in their study entitled `` *Assessment of biopsychosocial needs for patients with prostatic cancer*`` , that although a man`s goal and value are critical consideration in the treatment of patients post renal transplant, the educational needs about

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the surgery and their expected outcomes to fully understand or predict their own preferences increase. So, the patient's needs increase

In summary, this study revealed that, regarding physical needs, it was found that most common alteration among study subjects are cardiovascular, rest & sleep alteration while, more than half of them had moderate impairment function in daily living activity function. Regarding to psychological needs, it was found that more than one third of study subjects had moderate depression and extremely anxiety level. Regarding social needs, it was found that about two thirds of the study subjects had moderate social dysfunction, in addition to informational needs; it was found less than one third of the study subjects got unsatisfactory level of renal transplant surgery.

This is consistent with *Loeser & Fitzgibbon (2014)*, who stated that, renal transplant patients are confronted with a variety of physical, psychological, social and educational issues that if left unchecked or ignored, can rapidly contributes to diminished in quality of life.

Conclusion

Based on findings of the current study, it can be concluded that:

Overall, this study concluded that, regarding physical needs, it was found that most common systematic alterations among the study subjects were cardiovascular system alterations, rest & sleep and respiratory system alterations while. More than half of them had moderate impairment in daily living activity functioning. Regarding psychological needs, it was found that more than one third of the study subjects had moderate depression and extremely severe anxiety level. Regarding social needs, it was found that about two thirds of the study subjects had moderate social

dysfunction. In addition, it was found that less than one third of the study subjects had total unsatisfactory level of knowledge regarding renal transplant surgery.

Recommendations

Based on findings of the present study, the following are recommended to be done:

- Supportive care service should be directed towards meeting biopsychosocial needs.
- Further studies about the effect of the biopsychosocial needs of the patient's quality of life and out comes should be encouraged.
- Patients are in need of a simplified, illustrated and comprehensive Arabic booklet including information about renal transplant surgery and its therapeutic regiment.
- Continuous assessment of biopsychosocial domains for patients post renal transplant is highly recommended.
- Further research studies are needed to focus on studying factors affecting biopsychosocial needs for patient post renal transplant.

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