



**OBJN**  
Online Brazilian Journal of Nursing

**ENGLISH**

Federal Fluminense University

**AURORA DE AFONSO COSTA  
NURSING SCHOOL**



**Original Articles**



## Changes in basic human needs in patients after renal transplantation: a cross-sectional study

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### ABSTRACT

**Aim:** to identify the changes in basic human needs in patients undergoing kidney transplantation, in the light of the Theory of Basic Human Needs. **Method:** a cross-sectional study using a quantitative approach, conducted on 68 patients in the post-operative of renal transplant in a hospital in northeastern Brazil between the months of October 2013 and March 2014. The data collection instruments used were a script of anamnesis and a physical examination. The results were analyzed through Horta Theory. **Results:** a total of 13 changed needs have been identified, the most frequent being; elimination, oxygenation, hydration, mucocutaneous integrity, sleep/rest, nutrition and recreation. **Conclusion:** the study identified that there were changes in the basic human needs of patients undergoing kidney transplantation, that could be divided into psychobiological and psychosocial needs, that are relevant in supporting the development of a more specific plan of care for these clientele.

**Descriptors:** Nursing Theory; Nursing Process; Nursing Care; Kidney Transplantation.

## INTRODUCTION

Chronic renal failure (CRF) is a disease that can affect the entire body, caused by several kidney or urinary tract disorders<sup>(1)</sup>. It is the result of a gradual decrease in or irreversible loss of renal functions, characterized by the reduction in the glomerular filtration rate and/or injury to the renal parenchyma over a period of three months or more<sup>(2-3)</sup>.

Currently, the CRF is a global health problem and in Brazil affects more than 90,000 people, with the highest incidence in the age group 19 to 64 years. Those data tend to grow due to the increase in chronic diseases, population aging and delays in diagnosis of this disease<sup>(4)</sup>.

CRF treatment consists in association between pharmacology therapy, balanced nutrition, dialysis and when possible, renal transplantation. The choice of treatment depends on several factors such as; underlying disease, stage of the disease, speed reduction in glomerular filtration and associated comorbidities<sup>(2,5)</sup>.

Kidney transplantation provides a better quality of life for patients with CRF, but access does not occur in simple form, once the demand is growing and the number of kidneys available does not follow its growth. Besides that, it also involves the problem of finding a compatible donor to the patient and, lastly, runs the risk of having organ rejection, bringing this patient to the initial condition of kidney dysfunction<sup>(6)</sup>.

It is important to highlight that the person with CRF undergoing dialysis treatment, especially hemodialysis, has several needs: to live with an access to the treatment via an arteriovenous fistula, graft or double lumen catheter, dietary restrictions and fluid intake. This reality brings negative impacts to the

biopsychosocial being, as well as the person's lifestyle and family<sup>(2,3)</sup>.

Considering the complexity of the surgical procedure, the patient after renal transplantation has many needs, including emotional and psychotherapeutic support to help them adapt to the new organ and to prepare for the restructuring of their socio-familiar life and socio-productive working post-surgery; help with adapting to a new pace of life after hospital discharge and help with the motivation to live with their changed condition<sup>(5,6)</sup>.

Moreover, post-renal transplant patients also need assistance with direct health care and continues, because of the importance of monitoring the liver function, renal, hematologic, blood biochemistry, strict tracking for possible signs of infection as well as the continuous use of medication and adjustments to the immunosuppressive regimen<sup>(5,6)</sup>.

In this sense, nurses can provide an integrated health care<sup>(7)</sup>, taking account of the nursing process associated with a theory, because it gives more safety and quality to professional assistance<sup>(8)</sup>.

To implement nursing care, the nurse has access to the Systematization of Nursing Assistance (SNA), which can be guided by the Nursing Process (NP). It organizes professional work regarding the methods, personnel and instruments. Thus, the SNA can help nurses to organize their work, reducing the risk of organ rejection and increasing the quality of services provided<sup>(9)</sup>.

Nursing theories have emerged to support the profession as a science and to promote professional qualifications. The NP, when based on a theory, ensures more safety in nursing care, besides support and scientific character<sup>(3)</sup>.

The NP was introduced in Brazil by Wanda de Aguiar Horta through a theoretical model called Theory of Basic Human Needs. Her model covers laws that govern natural phenomena; the balance law (homeostasis), the adaptation law and the holism law<sup>(10)</sup>.

Horta's theory is based on the demonstration of basic human needs, that are understood as essential stress states for survival and result from homeostatic imbalances. They are vital, flexible, cyclic, dynamic, interrelated and universal. They are common to all humans, however the way they appear and how they are resolved is what will individualize each human being<sup>(10)</sup>.

The requirements are divided into psychobiological, that are instinctual, such as oxygenation and nutrition; into psychosocial, which are characterized as those that are generated socially, such as recreationally and in communication, and psychospiritual, which is when people try to interpret what science can't explain<sup>(8)</sup>.

Before the panorama presented, and to justify the development of the study, we looked for scientific evidence that basic human needs changed in patients after renal transplantation in the last five years using the following descriptors; *nursing theory, nursing process, nursing care and kidney transplant*. We used the following databases; Latin American and Caribbean Literature (LACL), International Literature in Health Sciences and Biomedical (Medline), Nursing Database (BDENF), SCOPUS, Web of Science, and CINAHL. The scarcity of studies related to this theme, particularly current research, justified the present study.

Furthermore, this research is important for the contribution that nurses can provide in identifying the basic human needs of balance, as an element for leading the development of the earliest possible action plan to direct

the treatment and care of the patient's needs, aiming qualify nursing care to patients in the postoperative period. Paying attention to risk factors that can lead to possible complications, as well as guiding the development of future research, thereby contributing to the construction of knowledge and enhancement of nursing.

From these assumptions the following question emerged: what basic human needs changed that caused imbalances in patients who underwent kidney transplantations?

Thus, this study aimed to identify those basic human needs that changed in patients who underwent kidney transplantations in the light of the Theory of Basic Human Needs.

## METHOD

This is a cross-sectional study, using a quantitative approach, conducted in a university hospital maintained by the National Health System, located in Rio Grande do Norte (RN), northeast Brazil. The choice of location took to be a reference in kidney transplantation in that region and accredited by the Brazilian Association of Organ Transplantation (BAOT).

The population consisted of 82 renal transplant patients, which represents the average number of transplants performed in the last five years (from 2008 to 2012) in that hospital, extracted from the registration system.

The sample size was calculated using the formula for finite populations, and taking into account a 95% confidence level ( $Z_{\infty} = 1.96$ ), a sampling error of 5%, the size of the population and the prevalence of renal transplants found in RN which was 0.02%<sup>(4)</sup>. The sample size was estimated to have a prevalence of

1%, in order to increase the size of the same. Thus, the sample consisted of 68 patients. Patients were selected by convenience sampling of consecutive type. The survey was conducted between the months of October 2013 and March 2014. The inclusion criteria for the study participants was; being over 18 years old; transplanted in the service; in mediate postoperative state; accompanied in the hospital; are in proper physical condition to carry out the anamnesis and physical examination. Those not in a suitable physical and mental state for carrying out the anamnesis and/or physical examination were excluded. Ethical aspects of the research were considered and respected, such as voluntary participation of patients and prior signature of a consent form.

Anamnesis and physical examination scripts based on the theory of basic human needs were used for data collection, and included; socioeconomic and transplant data, main complaint, functional and neurological independence, nutrition, elimination, sleep/ rest/ activity, relationships, stress tolerance, faith/ religion, security/protection and comfort, as well as a detailed physical examination.

For nurse teachers the instrument was submitted for validation of content and appearance between the months of August and September 2013. The sample was intentionally selected by assessment of their curricula, therefore, there was a search through the Lattes Platform of the National Council of Scientific and Technological Development (CNPq).

Inclusion criteria were: teaching on the undergraduate course in nursing, had a developed study published or completed titration (specialization, master's or PhD) related to the Systematization of Nursing Care, nursing theories and kidney transplantation, and had

academic guidelines in the field. Excluded were those informed in the Lattes Curriculum just the work of undergraduate course completion on the subject. Using this criteria, there were 22 teachers in the sample study.

After the selection of teachers, an invitation letter was sent via e-mail, explaining the research aims and asking them to sign the consent form. Thus, after confirmation of acceptance to participate in the research and signed the free and clear consent form, it was sent for instrument analysis.

Of the 22 invitations sent for instrument validation, 14 responses were returned, 4 refusals and 10 acceptances. So, to follow up on this stage, were sent to the 10 teachers who accepted the invitation to participate in the research the instrument and the instructions to complete via email.

The suggestions made were included in the instrument, then applied in the form of a pre-test on ten patients undergoing peritoneal dialysis. There was no need for modifications to the participants of the pre-test included in the study sample. It is highlighted that it was applied by the researchers individually with each patient on the day of outpatient consultation in a private room, free from interruptions and in order to preserve their privacy.

Collected data was analyzed using Aguiar Horta Wanda's Theory to identify the altered human needs. It is highlighted that in the process of identification of these amended requirements, the clinical histories were individually evaluated by two authors of this article, being the two doctors, in order to provide greater reliability to the results obtained, and these results were accepted. Those in which there was disagreement between the evaluators, had their clinical histories reassessed until a consensus was reached. In

addition, data was transferred to Microsoft Excel® to carry out descriptive and statistical analysis organized in tables showing absolute frequencies and percentages.

The research was developed respecting the ethical aspects regulated by the Guidelines and Standards Research in Human Beings, Resolution 466/12 of the National Health Council, and was approved by the Research Ethics Committee (REC) of the university hospital to start collecting data, with the number of Opinion 398,678, approval date 09/18/2013 and CAAE 19473613.2.0000.5537. In addition, to all participants the aims of the research were explained, read the Free and Clear Consent and informed and asked to sign them.

## RESULTS

The patients were mostly male (57.15%), aged 18-65 years, with a average age of 30-40 years, 57.15% were married, 28.6% single and 14.25% were in a stable relationship. Among the respondents, 64.3% were retired or were receiving sickness assistance from the National Institute of Social Security (INSS), while the rest were at home.

A total of 50% of the users were natives of the interior of Rio Grande do Norte, and the other 50% were divided between the capital of RN (35.7%) and other states in Brazil (14.3%). The predominant religion was catholic, (71.5%), but all had some regard for faith. Waiting time for the completion of transplantations was between 6-10 years for 42.9% of the respondents, and of these, 90% received organs from deceased donors and 10% from living donors.

It was identified that there were changes in 13 basic human needs related to psychological and psychosocial needs. However,

only seven were present in at least 50% of the sample. They are: elimination, oxygenation, muco-cutaneous integrity, nutrition, hydration, sleep, rest and recreation.

Table 1 shows the distribution of Basic Human Needs changed in renal post-transplant patients, divided into psychobiological and psychosocial needs.

**Table 1** - Basic Human Needs divided into psychobiological and psychosocial needs in patients after renal transplantation. Natal, 2014.

Psychobiological needs	N	%	Psychosocial Needs		
				N	%
Elimination	68	100	Leisure	55	80,8
Integrity muco-cutaneous	59	86,7	Recreation	28	41,1
Nutrition	55	80,8	Comunica-tion	14	20,5
Sleep and Rest	41	60,2	Acceptan-ce	12	17,6
Hydration	37	54,4	Freedom	5	7,3
Oxygenation	36	52,9			
Exercise and Physical Activity	31	45,5			
Body Care	14	20,5			

Source: Own elaboration, 2014.

## DISCUSSION

After collecting the data, it was observed that the findings relating to the socio-demographic profile of patients are similar to other studies with patients who have had kidney transplants<sup>(7,9,11,12)</sup>.

In a study of 835 patients in Belo Horizonte (MG), men were predominant in cases of patients who needed perform kidney transplant, as analyzed in this study<sup>(7)</sup>. A survey of 98 medical records showed that the mean age of the patients was 51 years, contradicting this research, which showed ages of between 30 and 40 years<sup>(11)</sup>.

In another study, also conducted in a university hospital, it was found that most patients with CRF were retired, had companion, and follow a religion, which <sup>(12)</sup> confirms what was observed in this study.

In a study conducted in the city of Fortaleza/CE it was observed that the average waiting time for kidney transplants was 6.5 years<sup>(9)</sup> which is similar to the findings of this research, of an average of 6 to 10 years.

This long waiting time for transplantation can be justified by due to some difficulties in the Brazilian health system, the lack of acceptance by families of the need for organ donation to their relatives; a lack of social assistance to families of patients who went into brain death protocol, as well as difficulty in reporting these cases; difficulties in obtaining organs and distribution between the states <sup>(5,6,13)</sup>.

Among the changes in basic human needs, elimination was the most frequent, being present in all participants in this study, which manifested as polyuria, a sign of imbalance. This psychobiological need, is common in post-renal transplant patients due to the change in urinary output related to the presence of the transplanted kidney and the body's adaptation phase<sup>(14)</sup>.

In this sense the nurses should monitor the urinary elimination, including frequency, consistency, odor, volume and color; note the time of the last elimination of urine and guide the patient and family to record the urine output, as appropriate and to assess the patient's hydration status (7,9).

In relation to Skin-Mucosa Integrity, classified as a psychobiological need, it was found that all the patients who underwent kidney transplantation used immunosuppressant drugs during treatment, such as prednisone corticosteroids, which can cause changes in

the skin, such as petechiae, delayed scarring, and other dermatological effects. In addition to the condition itself, the skin becomes more sensitive with some abrasions particularly around the surgical wound and. This need was also noted, as most patients had intravenous medications and showed discontinuity of the skin by the use of catheters<sup>(15)</sup>.

It is important to highlight that invasive methods such as dialysis (surgery of organic tissues) are risk situations for the colonization of bacteria, which can affect the patient's immune structure. Therefore, the nurse must have the skills and competence to implement interventions such as daily assessment of the dressing, and its exchange; do, guide, assist the position change and keep the patient clean and dry.

Given this need changed the patient is vulnerable to the risk of infection<sup>(7,9)</sup>.

Thus, the nurse must establish as care goal, maintain proper immune status of the patient, i.e., the natural resistance and acquired through the following interventions: health assessment, risk identification and use of universal precautions measures<sup>(2,3)</sup>.

Nutrition is also important, because many patients had this need psychobiological changed due to emesis, which could culminate in weight loss and deficit in the immune system. One possible cause for this situation is the accumulation of urea in the bloodstream, which can spread to the gastrointestinal tract and cause nausea and vomiting <sup>(3)</sup>.

Another factor in this symptomatology is hypercalcemia, since nephropathy calcium accumulates in the bloodstream which, in excess, stimulates the secretion of hydrochloric acid by the stomach, leaving the body more sensitive to nausea and vomiting <sup>(16)</sup>.

Usually, post-renal transplant patients may have nutritional imbalances, because

food becomes less restricted than during dialysis and appetite is increased by the use of immunosuppressive drugs<sup>(9)</sup>.

Nurses should promote the nutritional status of patients through the following activities; determining food intake and eating habits after renal transplantation; discussing nutritional requirements and perceptions of these as the prescribed\recommended diet; and provide referrals\consultations with other members of the health care team as appropriate; weigh the patient at specific intervals; monitoring trends in weight increase and loss; monitoring the levels of albumin, total protein, hemoglobin, and hematocrit, electrolytes, and lymphocytes; monitoring the energy levels, malaise, tiredness and weakness<sup>(2,3,7,9)</sup>.

Another psychobiological need considered in the study was oxygenation. Chronic renal patients and post-transplant mediate presents dyspnea and constant fatigue, often due to this anemia, but anemia is not necessarily caused by this. This complication begins with the deficit in the production of erythropoietin by the kidney, as with reduced renal function, stimulating erythropoiesis in the bone marrow decreases<sup>(16)</sup>.

It is noteworthy that fatigue may contribute to the restriction of the patient to bed, and with impaired ambulation, the venous network does not work properly, increasing the risk of pressure ulcers, pulmonary embolism and deep vein thrombosis<sup>(17,18)</sup>.

Thus, the nurse should control energy through nutritional folate supplements associated with cyanocobalamin to stimulate the production of erythropoietin, improving physical and functional capacity condition. However, excess erythropoietin can bring some side effects such as hypertension and thrombotic complications<sup>(15)</sup>.

Furthermore, the nurse may set care plan goals to maintain patients' activity and promote the practice of active and passive exercises<sup>(17,18)</sup>.

Hydration was also a psychobiological need with large changes in chronic renal and postoperative transplant patients. Without full renal function, the individual tends to retain sodium, water, accumulate substances in the blood, resulting in fluid overload and which results in edema and hypertension<sup>(13)</sup>.

The nurse must establish a target for water balance and thus make the necessary interventions such as water control, fluid and electrolyte control, water monitoring, evaluation of the presence of edema and the water balance<sup>(17,18)</sup>.

The psychobiological need for sleep and rest, were also identified in the research and are fundamental to be observed, because without sufficient sleep and rest, people get angry and tired<sup>(9)</sup>. Hospitalization as well as the disease itself makes patients more susceptible to disturbances in sleep, often because they are away from home, are concerned about financial issues and due to the fear of graft rejection<sup>(9)</sup>.

Because of increased water intake and the use of diuretics after transplantation, the transplanted patient has their sleep interrupted several times during the night because of urinary urgency, which contributes to the onset of this altered state<sup>(19,20)</sup>.

Given this need changed, nurses looking for promote patient sleep and adequate rest can perform interventions such as: teach the client relaxation techniques; determining the effect of drugs on sleep; discuss with the patient and their family measures of comfort, sleep monitoring techniques, changes in lifestyle and offering a calm and pleasant environment for adequate rest<sup>(17,18)</sup>.

Finally, the last identified need, classified as psychosocial was leisure, which is essential to the well-being and quality of life of patients. The hospital stay is unpleasant, because it requires some changes in the daily routines of patients. Some leisure and recreational activities can promote more comfort for customers, as can encouraging the maintenance of interpersonal relationships to overcome loneliness<sup>(17)</sup>.

The nurse must develop relaxing and leisure activities compatible with the clinical condition of the patient and review their history of activities/hobbies and make possible modifications<sup>(19,20)</sup>.

The changed basic human needs listed above are relevant, as they affect almost all chronic renal failure patients on renal post-transplant. They develop these needs due to the pathophysiology of renal disease and nurses have to plan and implement early actions to minimize them<sup>(19)</sup>.

In this sense, the use of the standard Theory of Horta can provide the nurse ways to organize information and customer data, to analyze and interpret this data and evaluate the results of the care process. The scientific planning and systematization of actions developed by nurses, give greater status to nursing as a science<sup>(20)</sup>.

Such needs are important to be observed because thanks to them the nurse selects which patients are at higher risk of developing complications such as the risk of graft rejection and malignant hypertension<sup>(18)</sup>. In addition to avoid future problems and ensure quality of care.

A study has shown that the promotion of a line of intense chronic care, led by the nurse, could bring numerous benefits to

patients, such as reduced emergency care and hospitalizations caused by imbalances in basic needs. The intervention included shared decision making and reorganization of the health system<sup>(19)</sup>.

Thus, nursing can act expressively, aiming their actions based on the identification of human responses and by establishing strategies that provide health recovery or improvements in the individual or collective well-being<sup>(2,5)</sup>.

Nursing care is important from pre to post-transplantation, because the basic needs of the patient may become unbalanced at any stage of the disease and pre-rehabilitation process. During the preoperative phase, nurses prepare for changes in biological and emotional conditions, for example, clarifying questions about the surgical procedure in order to reduce anxiety in patients and families<sup>(20)</sup>. In the intraoperative period, the nurse acts with the multidisciplinary team, trying to reduce possible complications during surgery and performing the specific procedures for that period, such as urinary catheterization<sup>(20)</sup>.

In relation to the postoperative period, the nurse evaluates and intervenes early to prevent possible complications<sup>(20)</sup>. In this period is very common needs imbalances, such as disturbances in the elimination and fluctuations in blood pressure, changes in sleep patterns, the electrolyte conditions, nutrition and risk of infection<sup>(9, 18, 20)</sup>.

The patient who is hospitalized deserves special attention during every phase of treatment, as their basic human needs change which can lead to risky situations and an extension of their disease stage. Therefore, it is essential that skilled nursing care is immediate and ongoing.



## CONCLUSION

The research in question identified 13 basic human needs that changed, namely; elimination, communication, oxygenation, leisure, skin integrity, recreation, body care, freedom, nutrition, acceptance, hydration, sleep and rest, exercise and physical activities. However, only seven were found to predominate in the sample.

The identification of basic human needs changed in post-renal transplant patients requires nurses to work out a specific care plan for this population. From the knowledge of these human responses, it becomes possible to predict, prevent, detect and control potential complications.

Facing the existing potential complications in the lives of individuals, which can compromise the survival of the renal graft and the patient himself, we see the need to think care practice focusing on identifying the basic human needs changed in these patients, to serve as parameter to set goals and definition of specific interventions for this population.

Thus, the use of the theoretical model of Horta can support the systematization of nursing assistance to kidney post-transplant patients, to contribute to the organization of nursing work, to target interventions to reduce the risk of rejection, increased quality of life of users and the visibility of nursing as a science.

Finally, the limits of the study were related to the type of non-probabilistic sampling used in the study in which the researcher selects the elements that have access, which does not guarantee the representativeness of the sample, making it difficult to generalize the results. However, it is expected that the study results will contribute to the standardization of the specific language of nursing and

stimulate further research in this area. Thus, it is considered that further studies must be developed in order to compare data from different realities.

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Received: 07/02/2015  
Revised: 05/20/2015  
Approved: 05/21/2015