PATIENT PROFILE AND NURSING WORKLOAD AT THE NEPHROLOGY UNIT

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ABSTRACT

Chronic kidney failure (CKF), which is frequently silent, can lead to considerable changes in the lives of patients. Depending on the stage, hospitalization and hours of nursing care are required to ensure medical and surgical treatment. The aim of this descriptive and quantitative study is to measure nursing workload at a nephrology unit based on daily application of the Nursing Activities Score (NAS) for 47 consecutive days. Patients were mostly young male adults in the chronic stage of the disease or admitted for kidney transplant. A total of 833 observations were obtained from 62 patients. The resulting NAS workload upon admission was 52%, corresponding to 12.5 hours of care per patient for 24 hours, which is similar to the workload found in intensive care units. This profile allows calculation of nursing work hours required for each patient, and is a valuable tool for nursing managers when determining the number of staff members required to ensure assistance. Other studies should be conducted for clinical validation.

Descriptors: Renal insufficiency, chronic. Progressive patient care. Nursing assessment. Nursing staff.

RESUMO

A doença renal crônica, frequentemente silenciosa, pode resultar em mudanças consideráveis na vida do indivíduo, e, dependendo do seu estágio, requer internações para tratamento clínico ou cirúrgico, o que demanda horas de enfermagem na assistência. Trata-se de um estudo descritivo, quantitativo que objetivou descrever o perfil dos pacientes internados na unidade de nefrologia e mensurar a carga de trabalho de enfermagem. Para a coleta de dados, foi utilizado o Nursing Activities Score, durante 47 dias consecutivos. Os pacientes foram, em sua maioria, do sexo masculino, adulto jovem, em estágio crônico da doença e internados para transplante renal. A média da carga foi de 52%, correspondendo a 12,5 horas de assistência, por paciente, nas 24 horas. Esse perfil se assemelha aos pacientes assistidos na unidade de terapia intensiva, tornando importante para o gerente de enfermagem reavaliar o quadro de pessoal para a assistência, e outros estudos serão necessários para reavaliar a carga requerida por esse perfil de pacientes.

Descritores: *Insuficiência renal crônica. Assistência progressiva ao paciente. Avaliação em enfermagem. Recursos humanos de enfermagem.*
Título: *Perfil dos pacientes e carga de trabalho de enfermagem na unidade de nefrologia*

RESUMEN

La enfermedad renal crónica (ERC), frecuentemente silenciosa, puede resultar en cambios considerables en la vida del individuo y dependiendo de su etapa exige hospitalización para el tratamiento médico o quirúrgico, que necesita horas de atención de la enfermería. Estudio descriptivo, cuantitativo con objeto de describir el perfil de los pacientes hospitalizados en la unidad de nefrología y mensurar la carga de trabajo de enfermería, con la aplicación diaria del Nursing Activities Score (NAS) durante 47 días consecutivos. Los pacientes eran en su mayoría hombres jóvenes de mayor edad, en etapa crónica de la enfermedad y hospitalizados por trasplante de riñón. La carga de trabajo resultante del NAS fue del 52%, correspondiente a 12,5 horas de atención, por cliente, por 24 horas. Este perfil es similar al de los pacientes tratados en la unidad de cuidados intensivos a ser importante que la enfermera gestora evalúe al personal de asistencia y si necesitan otros estudios para evaluar la carga exigida por este perfil de pacientes.

Descriptores: *Insuficiencia renal crónica. Atención progresiva al paciente. Evaluación en enfermería. Personal de enfermería.*
Título: *Perfil de los pacientes y carga de trabajo de enfermería en la unidad de nefrología.*

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INTRODUCTION

Chronic kidney failure (CKF) is a metabolic disorder caused by the progressive loss of glomerular filtration, with reduced toxin elimination and haemostatic capacity, generating hydroelectrolytic, acid-base and haemodynamic imbalance. The number of individuals suffering from CKF increases every year and contributes to a steadily growing number of hospital admissions [1-2].

Considering that this is an asymptomatic, progressive and irreversible disease, patients with CKF face drastic changes to their life styles and must depend on routine healthcare services that leads to a loss of autonomy [3-4]. In general, patients are male, between the ages of 19 and 64 and at the peak of their productive cycle [5].

Progression of CKF can be triggered by several systemic diseases, such as diabetes mellitus, hypertension, chronic glomerulonephritis, pyelonephritis, urinary tract obstruction, hereditary lesions, such as polycystic kidney disease, vascular disorders, infections, toxic agents or pharmaceutical drugs [1].

A study conducted with chronic renal patients undergoing dialysis showed that the main causes of hospital admissions were related to hypertensive crises, fever of unknown origin, gastrointestinal bleeding and congestive heart failure. In most of these patients, diabetic nephropathy and hypertensive crisis were the main motives for hospital admission [6].

Dialysis access, cardiovascular events and infections are among the main causes of hospitalization of patients undergoing haemodialysis [5]. The objective of this treatment is to compensate kidney function failure by means of dialysis or kidney transplant.

More conservative treatment, nutritional adaptation and medication can reduce progression or stabilize the disease when initiated at the moment of diagnosis and maintained for a long period, and positively impact survival rates and quality of life of patients. The progression of CKF, even with conservative treatment, inevitably leads the patient to dialysis, in the modalities of haemodialysis and peritoneal dialysis, or transplant [1].

These treatment modalities can affect or hinder work and leisure activities. Assistance related to adequate nutrition, medication and care with arteriovenous fistula are essential for success of treatment [3].

Assistance of patients and their family members is based on providing information and guidelines on the disease and its progression, treatment modalities, daily activities and their adaptations to ensure adherence to treatment [3]. The routine of haemodialysis sessions and the resulting physical and emotional strain, the volume and complexity of information related to the renal physiopathology and its treatment are variables that contribute to unsuccessful adaptation to the new reality [3].

Consequently, an interdisciplinary team, especially the nurse, plays an important role in assisting patients and their family members [7]. Furthermore, chronic health problems of patient, the required long-term care and the need for medical staff with technical and scientific knowledge are fundamental elements in the work dynamics of nursing in nephrology [8].

The nursing team that works in the nephrology unit is responsible for all the technical requirements and patient relationship with the environment. Monitoring, detection and intervention of nursing in relation to the disease are essential to minimize and prevent worsening of clinical conditions and improve the quality of life of these patients [6].

In light of patient care requirements, nursing assistance provided by an adequate number of qualified staff must be ensured, and the manager can use tools for this purpose considering that equilibrium of nursing staff directly reflects on the quality of nursing care [9].

There are instruments available to assess the complexity level of care in adult patients [9-10] and the dependence level of nursing [11-12]. However, these instruments are considered an indirect measure to assess nursing hours required by patients and, in practice, they do not always portray the real needs or complexity of patient care.

Nursing workload assessments using the Nursing Activities Score (NAS) are considered important to measure care requirements of patients during 24 hours of medical assistance [13-14]. Although the NAS was created to assess workload in intensive care units [15], it has shown favourable results when used to assess workload in clinical and surgical in-patient units [16-17] and for patients who are highly dependent on nursing care [18].

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The aim of this study was to describe the profile of hospitalized patients and assess nursing workload in the nephrology unit of a teaching hospital.

METHOD

This descriptive and qualitative study was conducted in the in-patient unit of a teaching hospital in the interior of the state of São Paulo that offers tertiary and quaternary assistance. The study unit has 18 beds, of which 16 are for nephrology and the remaining beds are for *otorhinolaryngology*. The nursing staff comprises 6 nurses and 16 nursing technicians, with only one nurse who specializes in nephrology.

Participants of the study were adult patients with acute and chronic kidney disease, admitted in the nephrology unit for clinical or surgical treatment. Data were collected using the NAS and a social and demographic (sex and age) and clinical (type of treatment, stage of disease and reason for admission) characterization chart of patients.

The NAS consists of seven care categories: a) Basic Activities; b) Ventilatory Support; c) Cardiovascular Support; d) Renal Support; e) Neurological Support; f) Metabolic Support and g) Specific Interventions, subdivided into 23 items. Each item is attributed a score for percentage of nursing hours and a final score with the sum of points attributed to each item. This score shows the nursing workload in percentage of nursing time spent on caring for a patient in 24 hours. The final score ranges from zero to 176.8 percent, meaning that one patient can require the assistance of more than one professional in a given work shift [13].

For data collection, data required for completing the NAS were obtained from nursing records and complementary information provided by the researcher who accompanied staff changeover from the night shift to the day shift. The sample consisted of 62 patients with daily data collection for each subject, during the day shift, from May to July 2011, totalling 47 consecutive days.

The study was approved by the Research Ethics Committee of the Faculty of Medical Science with resolution 239/2011, without written consent because assessment of patient care requirements is a daily and routine activity of the nursing staff and patients were not submitted to any other procedure for application of this tool.

Data were stored in a Microsoft® Excel spreadsheet and analysed using SPSS® 13.0 for Windows. This information was used to create frequency charts of category variables and descriptive statistics (average, standard deviation, median, minimum and maximum) of number variables.

Data were tested for normality using the Kolmogorov-Smirnoff test, which showed non-normal distribution. Non-parametric Mann-Whitney and Kruskal-Wallis tests were conducted to check association between variables, and the Chi-squared test was used to check categorical variables. Spearman´s coefficient was calculated to verify possible correlation between dependent and independent variables. The adopted significance level was 5%, that is, p-value < 0.05.

RESULTS

The samples consisted of 62 patients with an average age of 43 ±13.4 years old. Average hospital stay time of these patients was 10 days ± 6.2 days. Other clinical and demographic characteristics are shown in Table 1.

NAS data allows assessment of nursing activities during the 24-hour assistance period. Table 2 shows items and sub-items that appear with a frequency of over 50%.

Average, median and standard deviation of the NAS for the first 24 hours of hospital admission, during the hospital stay and at discharge were considered to assess workload required by patients (Table 3).

Mann-Whitney and Kruskal-Wallis tests were used to assess association between the three NAS measurements (at admission, during hospital stay and at patient discharge) with the variables sex, age, stage of disease, treatment and reasons for admission. This analysis showed that patients who underwent clinical treatment (p=0.046) and those who were admitted for Other Pathologies (p=0.004) had significantly greater nursing workloads during the entire hospital stay period (respectively 41.6% and 55.5%). Patients admitted for Other Pathologies also had significantly higher NAS loads during the first 24 hours of admission. Other associations between NAS measurements with the aforementioned variables did not present statistically significant differences at level p<0.05.

Table 1 – Demographic and clinical information of patients in the nephrology unit. Campinas, SP, 2011.

Variables	Nephrology Unit n(%)	p-value
Sex		
Male	37 (59.7)	0.128*
Female	25 (40.3)	
Age		
<30	12 (19.4)	
31-40	15 (24.2)	
41-50	14 (22.6)	0.505**
51-60	13 (21)	
>61	8 (12.9)	
Treatment		
Clinical	34 (54.8)	0.446*
Surgical	28 (45.2)	
Stage of disease		
Acute	17 (27.4)	0.000*
Chronic	45 (72.6)	
Reason for Admission		
Renal TX***	19 (30.6)	
Acute Kidney Injury (AKI)	15 (24.2)	
Acute-on-Chronic	12 (19.4)	0.118**
Infections	7 (11.3)	
Other Pathologies ****	9 (14.5)	

*Chi-squared Test ** Mann-Whitney Test
*** Renal TX is patients who are admitted for surgical intervention (Transplant).
*** Kidney Donor, Traumatic Brain Injury, Tenckhoff Catheter Implant, Diabetic Nephropathy and Fistula Infection.

After this analysis, correlation between workloads at the different moments of application were assessed, with the same variables as the analysis presented above. Spearman´s correlation coefficient showed a significant statistical difference only in relation to the NAS average during the hospital stay period (p=0.038) with reasons for admission, resulting in a high correlation (0.6).

DISCUSSION

In general, patients were male, between the ages of 30 and 60, and admitted for reasons of Renal TX and AKI, which shows a patient profile that is similar to the SBN 2010 census[5] and other studies[2,5].

The resulting workload of the NAS at admission was greater than workload average during hospital stay and at discharge, which was also detected in a study conducted in an intensive care unit[15]. Values found at discharge can be explained by the guidance activities required during this stage.

Patients with kidney disease need a high workload, which is higher than the workloads detected in studies with patients in medical and surgical units[16-17] and is similar to that of patients of a high-dependency nursing unit[18] and an intensive care unit[15].

There is a direct relationship between workload during the hospital stay period and variables such as reasons for admission and type of treatment, that is, depending on the reason for admission, the patient may require more nursing care. Patients who were admitted for Other Pathologies, such as Kidney Donor, Traumatic Brain Injury,

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Table 2 – Description of items and sub-items of the NAS with highest frequency in the nephrology unit. Campinas, SP, 2011.

Items	Nursing Activities Score	n	f (%)
3	Medication, except vasoactive drugs.	623	75.7
7a	Support and care for family members and patients who require exclusive dedication for around one hour on a given shift.	620	74.4
17	Urine output measurement.	619	74.3
4a	Hygiene procedures, such as: wound dressing and intravascular catheters, bed linen changes, patient body hygiene in special situations (incontinence, vomit, burns, wounds with secretion, complex surgical dressing with irrigation), special procedures (e.g. isolation), etc.	546	65.5
8a	Routine tasks, such as: clinical data processing, test requests, exchanging of professional information.	530	63.3
1a	Hourly vital signs, regular calculation and recording of fluid balance.	473	56.7

Table 3 – Description of average NAS score in the nephrology unit for the first 24 hours after admission, during the hospital stay period and at patient discharge. Campinas, SP, 2011.

Nephrology Unit	NAS Score
NAS admission	51.9±9.3
NAS hospital stay	39.4±7.4
NAS discharge	48.3±12.1

Tenckhoff Catheter Implant, Diabetic Nephropathy and Fistula Infection, required greater workload averages during the hospital stay period, which can be explained by the greater need for haemodynamic control due to clinical decompensation both in the acute stage of the disease and in the chronic and post-surgery stages. This fact can also be justified by improved clinical status of the patient after admission at the unit, taking into consideration that kidney transplant has the lowest workload average during this period and that studies show advancements in medicine, especially in relation to immunosuppressive drugs that increase the success rates of kidney transplants [19].

The study also indicates that patients undergoing clinical treatment require a greater workload during the hospital stay period. These findings support data found in other studies [16,17], and may be explained by conduction of tests reasons for admission and investigation of medical condition, such as kidney biopsy and the need to compensate the patient, as excretion and maintenance of hydroelectrolytic haemostasis of the organism is impaired.

In general, elderly patients are expected to require greater workloads due to physiological and emotional alterations, and sex and stage of the disease are also expected to influence acceptance of the disease and its requirements. However, this study shows that age and sex of patients, stage of the disease and type of treatment have no correlation with required workload during the three evaluation periods. There was only a correlation between the NAS average at admission and reasons for admission.

Considering that every point of the NAS corresponds to 0.24h, an average of 12.5 nursing hours were required during the 24-hour assistance period, in relation to the average of the initial 24 hours after admission, 11.6 hours for the NAS at discharge and 9.4 hours for the NAS during the entire hospital stay. According to resolution COFEN 293/2004 [20], the profile of these patients corresponds with those who require semi-intensive care.

This finding reveals a patient profile that is more complex than expected for an in-patient unit, and allows nurses to re-evaluate and re-adapt human, material and technological resources to ensure safe assistance that targets the nursing work process in terms of meeting key requirements of patients admitted at this unit.

In relation to NAS items, those that appeared with greater frequency were related to activities conducted by the nursing staff at any in-patient unit.

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The item *urine output measurement*, which is a renal investigation method, received the expected high frequency score for this patient profile in the nephrology unit. In this study, a high frequency score was also expected for the item *Support and care for family members and patients*, emphasizing the importance of detailed guidelines and follow-up of patients and their family members to ensure adherence to treatment and to new precautions and care that must be taken on a daily bases.

CONCLUSION

There was a predominance of male adult patients of reproductive age, in the chronic stage of the disease, and who were admitted to hospital to undergo a kidney transplant and clinical treatment.

Workload required by patients in the nephrology unit was greater during the first 24 hours of admission in relation to the average of hospital stay days and discharge from the unit, which corresponds with results of semi-intensive care, according to the COFEN resolution.

Items and sub items that appeared with the highest frequency are related to basic nursing activities, which is expected for this patient profile.

Limitations of this study were difficulties in obtaining information from the patient records due to incomplete registers, and the presence of one of the researchers was needed during the staff changeover from the night shift to the day shift to complement data.

Although the NAS was developed for use in intensive care units, one of the contributions of this study showed that the NAS enabled assessment of nursing workload required by patients in a nephrology unit, and other studies are needed for clinical validation.

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