2010 report of the Brazilian dialysis census

Relatório do censo brasileiro de diálise de 2010

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ABSTRACT

Introduction: National chronic dialysis data are fundamental for treatment planning. **Objective:** To report data of the annual survey of the Brazilian Society of Nephrology about patients with chronic renal failure who were on dialysis in 1 July, 2010. **Methods:** A national survey based on data from the country`s dialysis centers. Data collection was performed by using a questionnaire filled out online by the dialysis centers. **Results:** 340 (53.3%) centers answered the questionnaire. National data were estimated for the overall dialysis population. In July 2010, the estimated total number of patients on dialysis was 92,091. The estimated prevalence and incidence rates of end-stage chronic kidney disease patients on maintenance dialysis were 483 and 100/million population, respectively. The estimated number of patients starting a dialysis program in 2010 was 18,972. The annual crude mortality rate was 17.9%. Of those on maintenance dialysis, 30.7% were aged 65 years or older, 90.6% were on hemodialysis and 9.4% on peritoneal dialysis, 35,639 (38.7%) were on a kidney transplant waiting list, 28% were diabetics, 34.5% had serum phosphorus levels > 5.5 mg/dL, and 38.5% had hemoglobin levels < 11 g/dL. Vascular access was through a venous catheter in 13.6% of the hemodialysis patients. **Conclusions:** The number of end-stage kidney disease patients on maintenance dialysis is increasing in Brazil. Data concerning the indicators of the quality of maintenance dialysis improved compared to the prior year, and they highlight the importance of the census to guide chronic dialysis therapy.

RESUMO

Introdução: Dados nacionais sobre diálise crônica são essenciais para o planejamento do tratamento de tal enfermidade. **Objetivo:** Apresentar dados do Censo da Sociedade Brasileira de Nefrologia (SBN) sobre os pacientes com doença renal crônica que estavam em diálise de manutenção em 1 de julho de 2010. **Métodos:** Levantamento dos dados de unidades de diálise de todo o país. A coleta de dados foi feita utilizando questionário preenchido online pelas unidades de diálise do Brasil cadastradas na SBN. **Resultados:** Das unidades consultadas, 340 (53,3%) responderam ao Censo. A partir dessas respostas foram feitas estimativas nacionais para a população em diálise. Em julho de 2010, o número estimado de pacientes em diálise foi de 92.091. As estimativas nacionais das taxas de prevalência e de incidência de insuficiência renal crônica em tratamento dialítico foram de 483 e 100 pacientes por milhão da população, respectivamente. O número estimado de pacientes que iniciaram tratamento em 2010 foi 18.972. A taxa anual de mortalidade bruta foi de 17,9%. Dos pacientes prevalentes, 30,7% tinham idade igual ou superior a 65 anos; 90,6% estavam em hemodiálise e 9,4% em diálise peritoneal; 35.639 (38,7%) estavam em fila de espera para transplante; 28% eram diabéticos; 34,5% tinham fósforo sérico > 5,5 mg/dL e 38,5%, hemoglobina < 11 g/dL. O cateter venoso era usado como acesso vascular em 13,6% dos pacientes em hemodiálise. **Conclusões:** A prevalência de pacientes em diálise tem apresentado aumento progressivo. Os dados dos indicadores da qualidade de diálise de manutenção melhoraram em relação a 2009 e destacam a importância do censo anual para o planejamento da assistência dialítica.

Palavras-chave: Censos. Brasil. Diálise. Insuficiência renal crônica.

Keywords: Censuses. Brazil. Dialysis. End-stage kidney disease.

Introduction

Since the beginning of this century, the Brazilian Nephrology Society (*Sociedade Brasileira de Nefrologia*, SBN) has conducted an annual census of patients with end-stage renal disease (ESRD) on dialysis therapy, from information provided by the registered dialysis centers. This information has proved essential for improved knowledge about the patients on chronic dialysis in the country and for better planning of their care. This initiative has counted on the voluntary collaboration of the dialysis centers throughout the country. This is a report on the patients on dialysis in 1 July, 2010.

Methods

In July 2010, we conducted a survey of the ESRD patients on outpatient dialysis in all dialysis centers registered with the SBN. During the second semester of 2010, a form with the survey questions was available at the SBN electronic website, the dialysis centers being requested to fill it in and send it online to the SBN. Up to December 2010, deadline for information arrival, monthly reminders were sent to the units which had not responded. Whenever necessary, the data were obtained or confirmed through a telephone call from the SBN to the head of the center. The questions about some sociodemographic, clinical, laboratory and treatment data referred to patients on dialysis in 1 July, 2010. Data concerning mortality and admission of new patients to the dialysis program referred to July 2010 and were estimated for the year.

Of the 682 dialysis centers registered with the SBN in July 2010, 638 had an active chronic dialysis program and 340 (53.3%) answered the survey and had their data analyzed (Table 1). Information was obtained from 49,077 patients on dialysis in the 340 participating units. Because the data were grouped for each center and not individualized to each patient, they must be interpreted as the means of patients` characteristics and treatment practices of each unit. National data were estimated by taking into account the expected figures from the centers which did not answer the survey, calculated as the expected patient number mean, according to their regional location. The national and regional population estimates, used in the prevalence and incidence calculations, were obtained from the Brazilian Geography and Statistics Authority (*Instituto Brasileiro de Geografia e Estatística* - IBGE) January 2010 data. Grouped data were used to estimate the rates of off-target patients for recommended[1,2] dialysis dose (assessed through Kt/V or urea reduction ratio) and serum levels of albumin, phosphorus, parathyroid hormone (PTH) and hemoglobin.

Results

Figure 1 shows the distribution of the centers which answered the survey, according to region. The rate of units which answered was similar throughout the country, with most units situated in the South-East, followed by the South and North-East. Table 2 shows data concerning the funding source responsible for reimbursement of chronic dialysis maintenance treatment in Brazil. Of the 340 centers, 92.4% received reimbursement from the Brazilian Unified Health System (*Sistema Único de Saúde* – SUS), and 77.6% received reimbursements from other funding schemes.

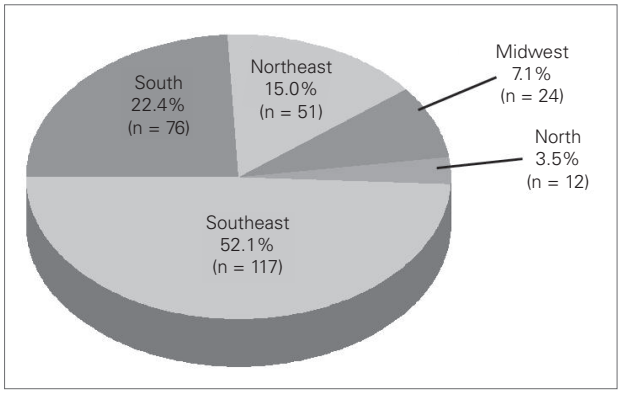
Table 1 General data of the dialysis centers, answers to the census and number of patients – 2010 Census

Number of centers with a chronic dialysis program	638
Centers which responded	340 (53,3%)
Type of center (private, philanthropic, public)	76%/16%/8%
Type of Center (satellite, hospital)	50%/50%
Number of patients in the 340 centers which responded	49,077
Estimated total number of patients on dialysis in the country	92,091
Brazilian population in January 2010 (IBGE)	190,73 million

85.8% of the patients were SUS-reimbursed, and 14.2% were reimbursed by private health insurance.

Figure 2 shows the total estimate of patients on dialysis in Brazil, during the 2000-2010 period. There has been a gradual increase from 42,695 in 2000 to 92,091 in 2010. Over half of these patients lived in the South-East. The prevalence rate of dialysis treatment in 2010 was 483 patients/million population, ranging from 265/million in the North and 591/million in the South-East (Figure 3). The estimated number of patients starting treatment in 2010 in Brazil was 18,972 (incidence rate: 99.5/million).

Figure 1. Centers which responded to the census (n = 340), according to region; 2010 Census.



1.6% of the patients were aged 18 years or under, and 30.7% were 65 or over. 57% of the total were male.

In July 2010, 90.6% of patients on chronic dialysis received hemodialysis (HD), and 9.4% peritoneal dialysis (PD), automated peritoneal dialysis (APD) being the predominant modality. Table 3 shows patient distribution according to dialysis modality and funding source; compared to those who were SUS-reimbursed, a higher rate of patients reimbursed by another health insurance scheme was on daily HD and APD. When the funding source was the SUS, the rate of patients on PD was lower than when funding came from elsewhere (9.0% and 12.3%, respectively).

The most frequent primary renal diseases were: hypertension (35%) and diabetes (28%), as can be seen in Figure 4.

Hepatitis-C (HCV) and hepatitis-B (HBV) seropositivity rates, which were 5.8 and 1.1%, respectively, have been declining. HIV seropositivity rate was 1.2%. In 2009, HCV, HBV and HIV seropositivity rates were 6.9, 1.3 and 0.6%, respectively.

The estimated rate of HD patients with access through a central venous catheter (temporary or permanent) was 13.6%. Of the 49,077 patients, the monthly hospitalization rate was 5.3% in July

Table 2 Dialysis treatment in relation to the reimbursing source – 2010 Census

Centers reimbursed by the Brazilian Unified Health System (SUS)	92.4%
Centers reimbursed by other (non-SUS) schemes	77.6%
SUS-reimbursed patients	85.8%
Patients reimbursed by other (non-SUS) schemes	14.2%
Mean number of patients with other sources of reimbursement per center	20.5

Figure 2. Estimated total numbers of patients on dialysis treatment in the country, according to the year; 2010 Census.

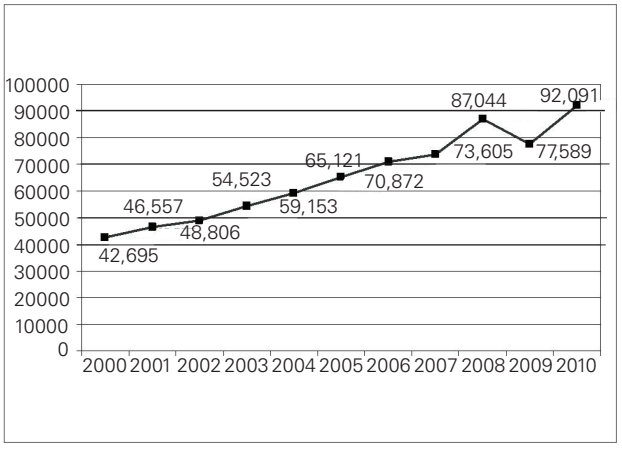
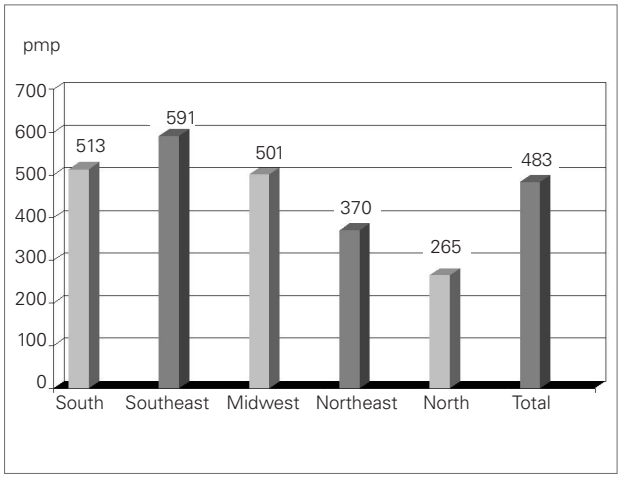


Figure 3. Estimated prevalence of patients on dialysis in Brazil, according to region; 2010 Census.



2010. As for the recommended laboratory indices,[1,2] Figure 5 shows that of those on HD, 19.2% had a Kt/V < 1.2 or urea reduction ratio < 65%; 13.1% had serum albumin levels < 3.5 g/dL; 34.5% serum phosphorus > 5.5 mg/dL and; 28.1%, PTH > 300 pg/mL. 14.2% had PTH < 100 pg/mL and 38.5% had hemoglobin < 11 g/dL.

Figure 6 shows the rates of use of some selected medications: 81% were on erythropoietin; 53% on intravenous iron supplementation; 32% on vitamin D and 36% on sevelamer phosphate binder.

The estimated number of patients enrolled in a kidney transplant waiting list in July 2010 was 35,639, equivalent to a 38.7% (35,639/92,091) rate.

The estimated number of deaths in 2010 was 16,505, corresponding to a 17.9% crude mortality rate (with the population on dialysis in 1 July as the denominator) during the year. This rate falls to 14.9% when the patients at risk in the year (who were on dialysis during the year) are included in the denominator. Figure 7 shows the crude mortality rates from 2008 to 2010.

Discussion

This study, which was based on data from the July 2010 Brazilian Dialysis Census, provides an insight into the status of the dialysis centers and of the patients on chronic dialysis treatment in Brazil. The results were based on data from the centers which responded to the survey (approximately 50% of the centers). This rate is lower than that of 2009 (60%).[3] This was due, in part, to the method of data collection, which became exclusively online in the last year, and which still needs improving.

The proportion of centers which responded is quite similar to the total distribution of dialysis centers per region, which leads us to assume a national generalization of the results. The estimates suggest an increased number (and an increased prevalence rate) of patients on dialysis in 2010, in relation to previous years, reaching 6.5%/year for the last 4 years. Yearly estimates must be interpreted with caution though, because of the variable response rate and variations in the month the data were collected. In 2009, for

Table 3 Distribution of patients according to dialysis modality and funding source – 2010 Census

Modality	SUS n (%)	Non-SUS n (%)	Total n (%)
Conventional HD	38,048 (90.3)	5,958 (85.7)	44,003 (89.7)
Daily HD (> 4/week)	300 (0.7)	145 (2.1)	445 (0.9)
CAPD	1,784 (4.2)	217 (3.1)	2,001 (4.1)
APD	1,888 (4.5)	627 (9.0)	2,515 (5.1)
IPD	104 (0.2)	9 (0.1)	113 (0.2)
Total	42,121 (100)	6,956 (100)	49,077 (100)

Figure 4. Primary diagnosis of patients on dialysis; 2010 Census.

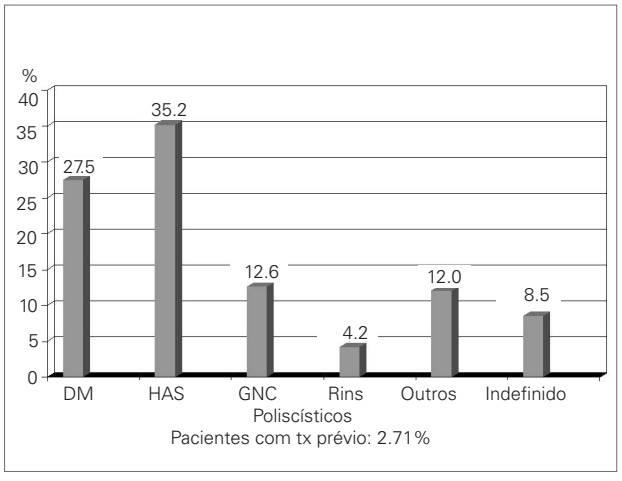


Figure 5. Rates of patients with off-target laboratory results 2009-2010; 2010 Census.

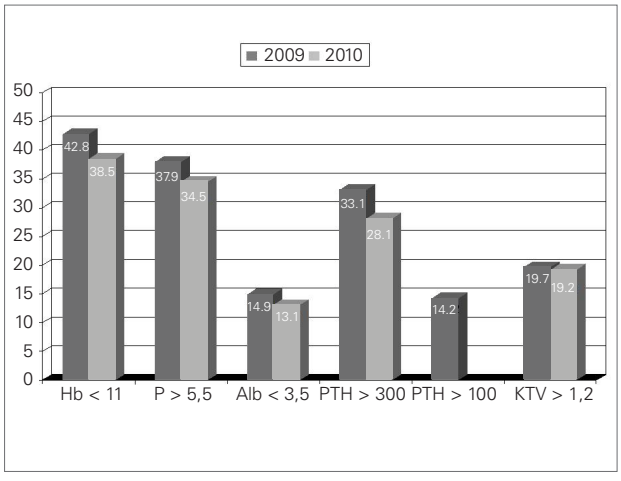


Figure 6. Rates of patients on some selected medications 2009-2010; 2010 Census.

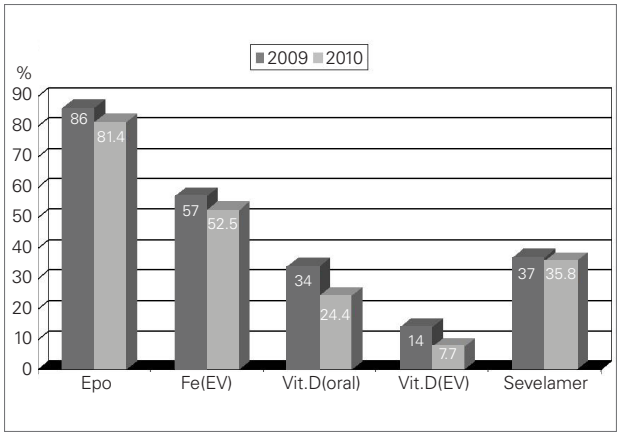
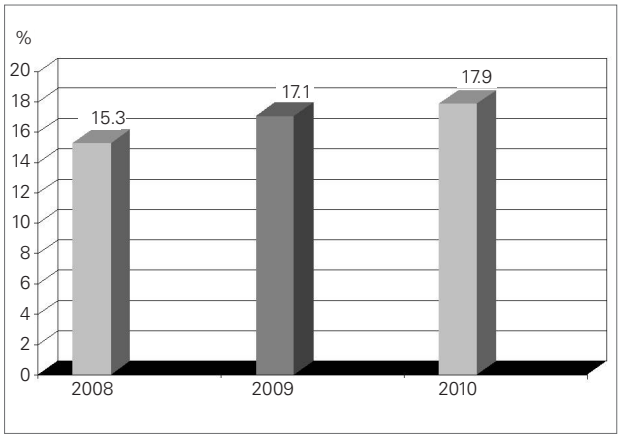


Figure 7. 2008-2010 crude mortality rate; 2010 Census.



example, the data referred to January, whereas from 2010 onwards, the date was set in July.

The global prevalence rate of patients on dialysis (483/million) should be added to that of patients with a functioning transplant, so as to obtain the actual rate of renal replacement therapy, which may reach 650-700/million, depending on the non-confirmed number of patients with a functioning kidney graft. This latter rate is lower than those of Chile, Uruguay and developed European nations (around 1,000/million) and of North America (1,750/million), in 2008.[4] Because of wide regional variation, however, the South-East rate must be close to that of developed nations. About 19,000 patients were started on chronic dialysis treatment in 2010, a figure to which pre-emptive transplant recipients should be added, so that a more accurate incidence rate could be calculated. The latter does not seem to be far from that observed in more developed countries, with the exception of the United States (362/million) and Japan (288/million).[4]

The 90.6% rate of patients on maintenance HD is similar to those from previous censuses, with a highlight on a higher rate of patients on APD among those subsidized by a supplementary health scheme and on the incipient contribution of daily HD as a therapeutic modality. Hypertensive nephropathy and diabetic nephropathy are the main primary diseases. HCV and HBV seropositivity has been declining each year. Conversely, the observation that HIV seropositivity has increased merits follow-up. There was a decrease in the number of off-target patients according to international guidelines for laboratory results,[1,2] compared with the previous year. Anemia rate reached 38%, although most patients receive erythropoietin and intravenous iron supplementation. The recent recommendation of lower hemoglobin target values for this population may attenuate this indicator. The high rate of patients with anemia and higher-than-recommended phosphorus and PTH levels has also been observed in developed European countries, the United States and Japan.[5,6] The inadequacy of mineral balance found occurs in spite of the high rate of patients on sevelamer phosphate binder (36%) and vitamin D (32%), the latter showing a decrease in relation to 2009. Crude mortality rate increased compared with previous years, which should be confirmed on future follow-up. In spite of this increase, the rate remains lower than that for the population on maintenance dialysis in the United States.[4]

Generalization of these findings must be carefully made, because of the rate of responding centers, the technique of grouped data collection and the lack of validation of the answers received.

Conclusions

The SBN census is an important instrument to know dialysis treatment in Brazil, providing information for the improved care of end-stage chronic kidney disease patients and for planning of the national chronic dialysis treatment policy.

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