Brazilian Dialysis Census, 2009

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Abstract

Introduction: National dialysis data are fundamental for treatment planning. **Objective:** To report data of the annual survey of the Brazilian Society of Nephrology about chronic renal failure patients on dialysis in January 2009. **Methods:** A survey based on data of dialysis units from the whole country. The data collection was performed by using a questionnaire filled out by the dialysis units in Brazil. **Results:** 427 (69.8%) of the dialysis units in the country answered the questionnaire. National data were estimated for the overall dialysis population. In January 2009, the total estimated number of patients on dialysis was 77,589. The estimated prevalence and incidence rates of chronic renal failure on maintenance dialysis were 405 and 144 patients per million population, respectively. The estimated number of new patients starting dialysis program in 2009 was 27,612. The annual gross mortality rate was 17.1%. For prevalent patients, 39.9% were aged 65 years or older, 89.6% were on hemodialysis and 10.4% on peritoneal dialysis, 30,419 (39.2%) were on a waiting list of renal transplant, 27% were diabetics, 37.9% had serum phosphorus > 5.5 mg/dL and 42.8% hemoglobin < 11 g/dL. A venous catheter was the vascular access for 12.4% of the hemodialysis patients. **Conclusions:** The prevalence of chronic renal failure on maintenance dialysis is increasing in Brazil, although in 2009 the estimate is lower than in 2008. The data call attention to indicators of the quality of maintenance dialysis that need to be improved and highlight the importance of the census to guide chronic dialysis therapy.

Keywords: dialysis, chronic kidney failure, census data.

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Introduction

The systematic collection and disclosure of information on the maintenance dialysis treatment in Brazil is important to identify aspects that need to be improved and to guide health care planning. Since the beginning of the new millennium, the Brazilian Society of Nephrology (SBN) has made an effort to produce an annual survey of patients with chronic kidney failure undergoing a dialysis program in Brazil. That is a fundamental activity of the SBN, which counts on the voluntary response of the dialysis units throughout the country. We report data regarding patients undergoing dialysis on January first, 2009, based on the information provided by the dialysis units registered at the SBN.

Methods

A survey about patients with chronic kidney failure undergoing outpatient dialysis programs was conducted in all dialysis units registered at SBN. During the first semester of 2009, one questionnaire was available on the internet in the web site of the SBN, and all dialysis units of the country were requested to complete it and send their data 'on-line' or by fax to the SBN administrative office. The dialysis units that did not complete the form were monthly requested to complete it until the end of the survey (July 2009). When necessary, the secretary of the SBN phoned the responsible for the dialysis unit to obtain or confirm missing data. The questions about some sociodemographic, clinical, laboratory, and treatment aspects referred to patients undergoing dialysis on January first, 2009. Data regarding mortality and entrance of new patients into

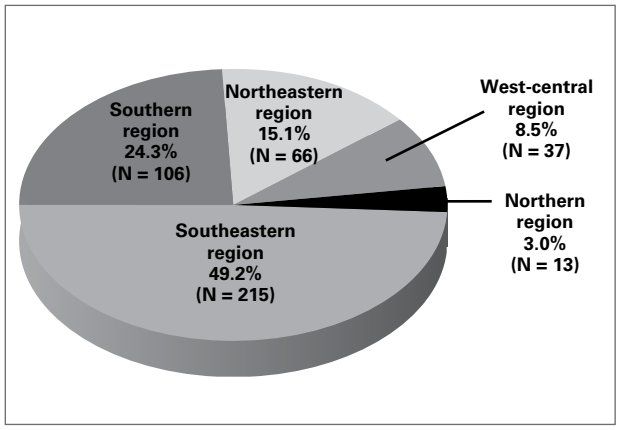
dialysis programs referred to the month of January 2009 and were estimated for the year.

Of the 626 dialysis units registered at the SBN in January 2009, 437 (69.8%) completed the questionnaire, and 412 really had a dialysis program (Table 1). Those 412 units had 53,816 patients undergoing dialysis and their data were analyzed. Data were sent to the SBN not individually but in groups, according to the questions. National data were estimated, considering even the numbers expected from the units that did not respond the questionnaire. To these units that did not respond the questionnaire, the mean number of patients expected for the region was attributed. The population estimates of Brazil and each Brazilian geographic region used for calculating the prevalence and incidence rates were based on updated estimates of the Brazilian Institute of Geography and Statistics (IBGE) for January 2009.

Results

Figure 1 shows the distribution of the units that completed the form, according to the Brazilian geographic regions. Such distribution is similar to that of all dialysis units registered in Brazil. Approximately 50% of the dialysis units are located in the Southeastern region. Table 2 shows the entities responsible for financing the maintenance dialysis programs in Brazil. In the 412 units providing chronic dialysis programs and that answered the questionnaire, medical care was financed by the following entities: only the Brazilian Public Unified Health Care System (SUS), 16% of the dialysis units; SUS and health insurance, 75.3%; only the health insurance, 8.7% of the dialysis units. Of all patients, 86.7% were reimbursed by SUS, and 13.3% by private health insurance.

Figure 1. Dialysis units that answered the questionnaire, according to the Brazilian geographic regions, 2009 census.



The number of patients undergoing dialysis estimated on January 2009 was 77,589, more than half being in the Southeastern region (Figure 2). In 2008, a deflection was observed in the ascending curve of the number of patients undergoing dialysis. However, an increasing tendency in the number of patients undergoing dialysis in the last decade can be observed. The prevalence rate of dialysis treatment in 2009 was 405 patients per million population (pmp), varying

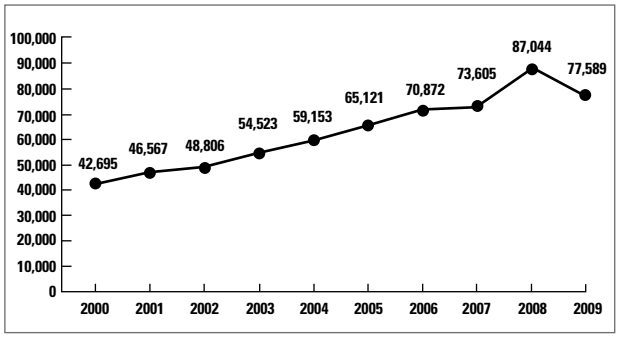
Table 1 General data about dialysis units, answers to the questionnaire, and number of patients (2009 census)

Active dialysis units registered at the SBN	626
Estimated number of units providing chronic dialysis programs	594
Units that answered the questionnaire	437 (69.8%)
Units with chronic programs and that answered the questionnaire	412 (65.8%)
Number of patients in the 412 units that answered the questionnaire	53,816
Total estimated number of patients undergoing dialysis in Brazil	77,589
Brazilian population in January 2009 (IBGE)	191,480,630

Table 2 Dialysis treatment according to the financing entity (SBN census)

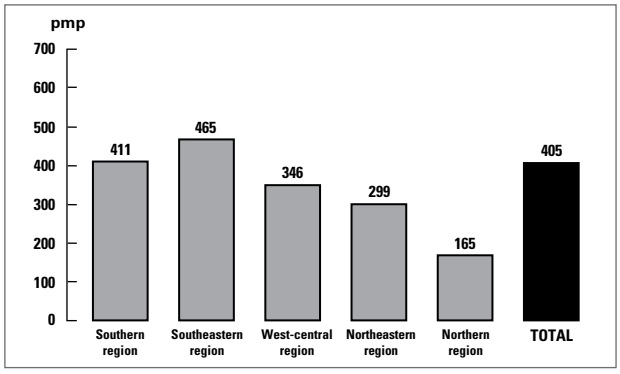
Brazilian Public Unified Health Care System (SUS)	91.3%
Only the SUS	16.0%
Health insurance agencies other than SUS	75.3%
Patients reimbursed by the SUS	86.7%
Patients reimbursed by other health insurance agencies	13.3%
Mean number of patients with other health insurance agencies per unit	16.4

Figure 2. Total number of patients undergoing dialysis treatment in Brazil, 2009 census.



according to the geographic region from 165 patients pmp in the Northern region to 465 patients pmp in the Southeastern region (Figure 3). The number of patients beginning dialysis treatment in 2009 was estimated in 27,612, corresponding to an incidence rate of 144 patients pmp. Thirty-five percent of the new patients had diabetes as their basic diagnosis. In 93% of the cases, the initial dialysis modality was hemodialysis.

Figure 3. Estimated prevalence of patients undergoing dialysis in Brazil according to the geographic region, 2009 census



The percentages of patients undergoing dialysis aged 18 years or under and 60 years or above were 2.8% and 39.9%, respectively. Males corresponded to 57%.

In January 2009, 89.6% (48,207/53,816) of the patients undergoing chronic dialysis were being treated with hemodialysis, and 10.4% with peritoneal dialysis, whose predominant modality was automated peritoneal dialysis (Figure 3).

Regarding the primary kidney disease, arterial hypertension (35%) and diabetes (27%) were the most frequent (Figure 4).

The prevalences of positive serology for hepatitis C and B viruses in patients undergoing chronic dialysis in Brazil were 6.9% and 1.3%, respectively, and have decreased annually. In 2008, the prevalences of positive serology for hepatitis C and B viruses were 7.6% and 1.9%, respectively. The prevalence of positive serology for HIV in patients undergoing dialysis was 0.6%.

Figure 4. Percentage of patients (N) according to dialysis type, 2009 census.

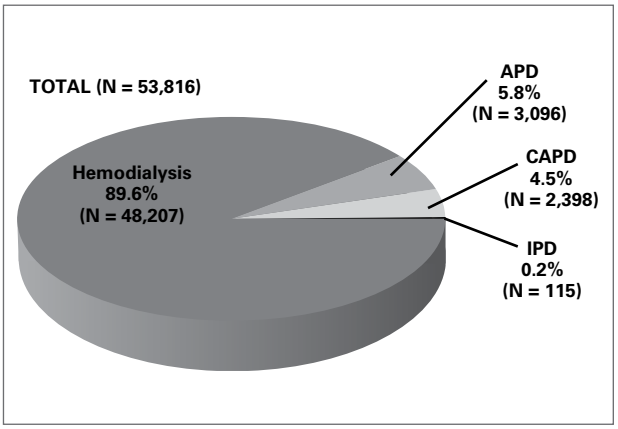
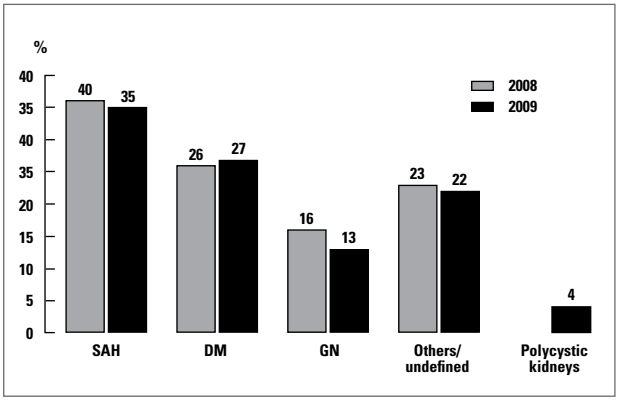


Figure 5. Basic diagnosis of patients undergoing dialysis in 2008-2009, 2009 census.



The mean percentage of patients undergoing hemodialysis with access through central venous catheter (temporary or permanent) was 12.4%. In the sample assessed, 53,816 patients in January 2009, the monthly hospitalization rate was 5.3%, and 1% of the patients was hospitalized due to problems with the vascular access. Regarding the laboratory indices recommended to dialysis patients,[1,2] Figure 6 shows the percentages of hemodialysis patients with laboratory tests not conforming with the recommended indices as follows: Kt/V < 1.2 or urea reduction ratio < 65%, 19.7%; serum concentration of albumin < 3.5 g/dL, 14.9%; serum phosphorus > 5.5 mg/dL, 37.9%; PTH > 300 pg/ml, 33.1%; and hemoglobin < 11 g/dL, 42.8%.

Figure 7 shows the percentages of use of some medications in those patients: erythropoietin, 86%; intravenous iron, 57%; vitamin D, 48%; sevelamer, 37%; and statins, 18%.

Figure 6. Percentage of hemodialysis patients with laboratory tests not conforming with the recommended indices in 2008-2009, 2009 census.

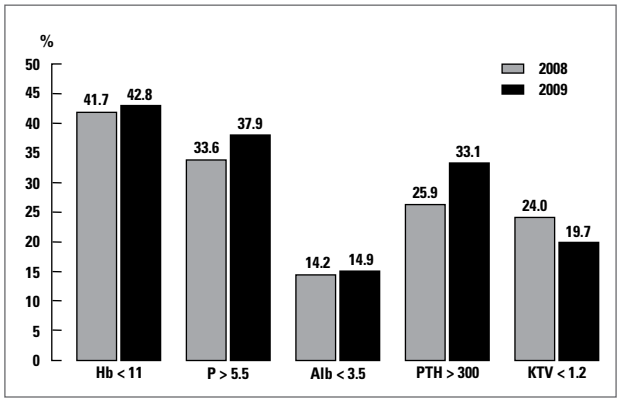
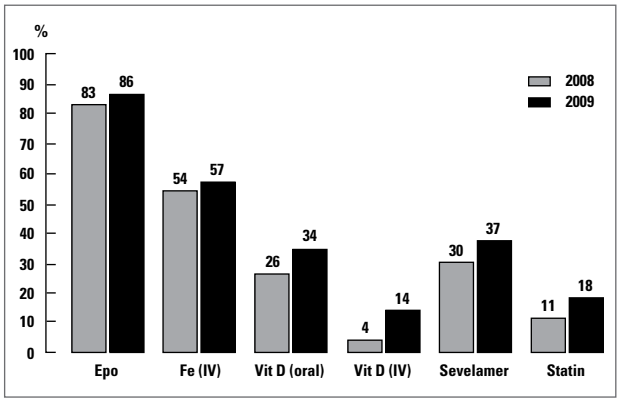


Figure 7. Percentage of patients using selected medications in 2008-2009, 2009 census.



The estimated number of patients in the waiting list for transplantation in January 2009 was 30,419 (39.2%).

The estimated number of deaths in 2009 was 13,235, corresponding to a gross mortality rate of 17.1% during that year. The major causes of death were as follows: cardiovascular (35%); infectious (24%); cerebrovascular (9%); neoplasia (7%); others (16%); and unknown (8%).

Discussion

This article, by using data of the Brazilian Dialysis Census referring to January 2009, provides an overview of the situation of dialysis units and of patients undergoing maintenance dialysis treatment in Brazil. The results are based on data from the dialysis units that answered the questionnaire, which represent approximately 70.0% of the dialysis units in the country. That represents an improvement as compared to the previous year, when only 48% of the dialysis units answered the questionnaires.[3] The percent distribution of the dialysis units that answered the questionnaire is very similar to the total distribution of dialysis units according to the Brazilian geographic region, allowing for a reasonably safe generalization of the results. The estimates suggest a decrease in the number of patients and in the prevalence rate of dialysis treatment as compared to 2008. However, those results should be carefully assessed before definitive conclusions are reached, because, as already emphasized on the 2008 report,[3] the estimates of that year were based on a smaller number of dialysis units (50%). Thus, the possibility of an overestimation of the total number of dialysis units in Brazil cannot be ruled out, which may have resulted in an overestimation of the prevalence for 2008. We consider the possibility of an overestimation for the year 2008 more feasible than an actual decrease in the number of dialysis patients in 2009. It is worth noting that the number of dialysis patients in 2009 was greater than that in 2007, and that a linear increase in the number of patients undergoing maintenance dialysis was observed from 2000 to 2007 (Figure 2).

The results of the 2009 census draw attention to the large variation in the prevalence of dialysis treatment in different geographic regions of the country. The lower prevalence in the Northeastern and Northern regions may be mainly due to a smaller availability of nephrology services and access to them in those regions rather than to a lower incidence of chronic kidney diseases requiring renal replacement therapy there. The percentage (90%) of patients undergoing maintenance hemodialysis is similar to that observed in previous surveys. According to the results, hypertensive nephropathy continues to be the major underlying kidney disease in patients undergoing maintenance dialysis programs in the country, although the importance of diabetes mellitus has increased in patients beginning dialysis treatment. Positive serology for hepatitis continues to decrease annually. It is worth noting the significant percentage of patients with anemia, despite the use of erythropoietin in the large majority of patients (although information on the regularity of its offer lacks), as well as of intravenous iron. More recently, a lower range of target values of hemoglobin has been recommended, which can attenuate our lack of scope of that indicator. A high percentage of patients with increased levels of phosphorus and PTH as compared to the target levels recommended has also been observed. However, that difficulty has also been observed in European countries, the United States of America, and Japan.[4,5] The lack of adequacy observed in the Brazilian Census data for

controlling anemia and the indicators of mineral metabolism disorders occurs despite the high percentage of patients using high-cost medications, such as erythropoietin, sevelamer, and vitamin D. The gross mortality rate showed an increase when compared with that of previous years, although that possible tendency is still to be confirmed in future studies. Despite the tendency towards an increase, the mortality rate observed in Brazil remains lower than that reported to the USA population undergoing maintenance dialysis.[6] The influence of the age and co-morbidity differences on the mortality rate of patients undergoing maintenance dialysis programs in Brazil and other countries should be assessed.

Our results stress the importance of the annual survey, despite the limited number of parameters assessed and the restrictions associated to the validation of the data provided. Many relevant questions could not be assessed because of data collection was based on groups of patients. Further studies aiming at validating the information presented are also necessary.

Conclusions

By showing the reality of renal replacement therapy through dialysis in our country, information deriving from the survey should help in defining interventions to improve the quality of the treatment, resulting in a better cost-benefit ratio. The initiative of the SBN to systematically collect and disclosure information is fundamental to continuously improve health care to patients with end-stage renal disease and to plan the national policy for dialysis treatment in Brazil. The SBN project of the national dialysis registry is ongoing and should provide more detailed information about the situation of maintenance dialysis in our country in the short run.

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