Factors associated with the quality of life of incident patients on PD in Brazil (BRAZPD)

Authors

Fabiane Rossi dos Santos Grincenkov[1,2]
Natália Fernandes[1,3]
Alfredo Chaoubah[4]
Kleyton Bastos[5]
Abdul Rashid Qureshi[6]
Roberto Pecoits-Filho[7]
José Carolino Divino Filho[7]
Marcus Gomes Bastos[3]

[1] Núcleo Interdisciplinar de Estudos e Pesquisas em Nefrologia; Universidade Federal de Juiz de Fora – UFJF
[2] Departamento de Psicologia; Centro de Ensino Superior de Juiz de Fora
[3] Departamento de Medicina – UFJF
[4] Departamento de Estatística – UFJF
[5] Departamento de Medicina- Universidade Federal de Sergipe – SE
[6] Baxter Novum and Renal Medicine, CLINTEC, Karolinska Institute, Stockholm, Sweden
[7] Centro de Saúde e CiÍncias Biológicas; Pontifícia Universidade Católica do Paraná – PUC PR

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Corresponding author:
Fabiane Rossi dos Santos Grincenkov
Fundação IMEPEN
Rua José Lourenço Kelmer, 1300/208-222, São Pedro
Juiz de Fora – MG – Brazil
CEP: 36036330
E-mail:
fabpsic@yahoo.com.br

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ABSTRACT

Introduction: The number of patients on peritoneal dialysis (PD) in Brazil is significant, with a higher prevalence of diabetic and elderly individuals on PD than on hemodialysis. These data point to a selection bias in that population. **Objective:** To assess the quality of life (QoL) of patients starting PD in Brazil. **Methods:** The study assessed 6,198 patients participating in a multicenter prospective cohort study, using data from BRAZPD. The QoL was assessed by use of the Karnofsky index (QoL assessment by health professionals) and the SF-36 (patient's self-assessment) in 1,624 incident patients. **Results:** Of the patients analyzed, 40% were diabetic and 47% were elderly (over the age of 60 years). Patients had low QoL scores in all the SF-36 domains, the "physical role" domain being the most affected and the "social functioning" domain having the best score. On the other hand, according to the Karnofsky index, most patients had high QoL scores. Elderly and diabetic patients had lower QoL as compared with non-elderly and non-diabetic by using both the SF-36 and Karnofsky index. **Conclusion:** The overall evaluation by use of the SF-36 showed a reduction in the QoL. The Karnofsky index showed a better QoL as compared with the SF-36 assessment, but similar results were found in the subgroups evaluated: the ederly and the diabetic patients had the worst QoL in both assessments.

Keywords: peritoneal dialysis, quality of life, SF-36, Karnofsky index.

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INTRODUCTION

Patients with chronic kidney disease (CKD) usually tend to show a reduction in their quality of life (QoL) because of the several restrictions resulting from CKD treatment. Some studies have reported no difference in the QoL of patients undergoing hemodialysis (HD) as compared with that of patients undergoing peritoneal dialysis (PD), since both groups have a reduction in scores.[1] However, some authors, such as Zhang *et al*.[2], have reported a better QoL of patients undergoing PD.

The presence of diabetes is a factor that can influence the QoL of such patients. As compared with non-diabetic patients, diabetic patients use more medications, score lower in the physical domains of the Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36), and have greater blood pressure levels, more cardiovascular complications, a worse self-perception of QoL, lower physical functioning, and higher mortality.[3] The presence of comorbidities can, thus, relate to the reduction in QoL.

The predominance of elderly and diabetic patients in the population on HD can influence negatively certain QoL domains, as compared to other subgroups of patients.[4]

The impact of kidney disease on QoL has been observed in Australian patients, and revealed a significant deficit in all domains of the SF-36, except for vitality and mental health. Patients with other comorbidities had lower scores in five of the eight QoL domains. In addition, mental health was particularly impaired in the younger group, and physical health in the elderly group with CKD.[5]

Factors, such as age and presence of diabetes, can, thus, influence significantly the QoL of patients with CKD. Interventions enhancing the clinical conditions and QoL of those patients are paramount, since the latter is directly associated with mortality in that population.

The association between the reduction in QoL and preventable and controllable factors points to the importance of psychosocial interventions in that population.[6]

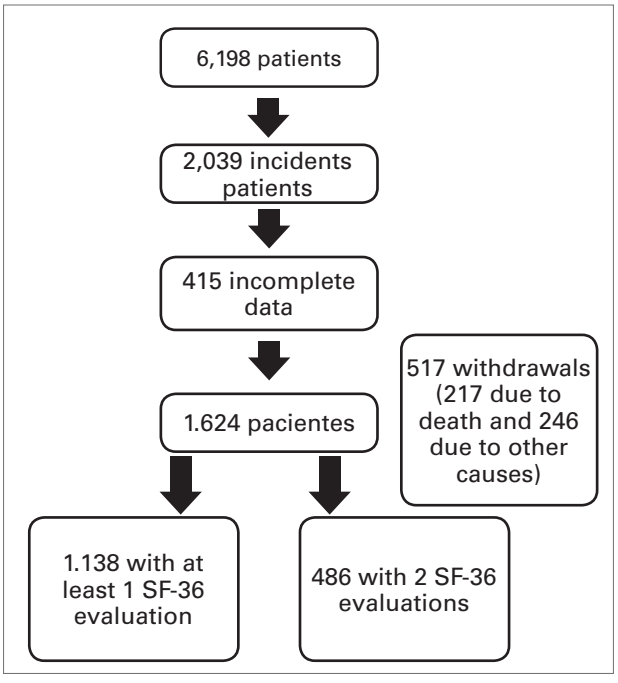
This study aimed at assessing the QoL of patients with CKD at the beginning of the treatment with PD in Brazil.

Patients and Method

This prospective multicenter cohort study comprised 6,198 patients and used data from the BRAZPD (Estudo Clínico Multicêntrico em Diálise Peritoneal – Brazilian Multicenter Clinical Study on PD). This study included 114 centers of renal replacement therapy (RRT) with more than ten patients on PD using the Baxter systems. At all centers, a physician and a nurse were trained to enter the patients' information into the data base by using the PDnet software, especially developed for the study.

Figure 1 shows that of 6,198 patients, 2,039 were incident. Four hundred and fifteen patients lacked complete QoL data for analysis, leaving, thus, 1624 patients in the study. There were 517 widthdrawls, 271 due to death and 246 due to other causes.

Figure 1. Patients evaliation flow.



Assessment of QoL was performed by use of two instruments: the Karnofsky performance scale index[7] and the SF-36.[8] Assessment according to the Karnofsky index, whose maximum score of 100 points corresponds to the best QoL, was performed monthly by health professionals (nurses).

The SF-36 was used to assess 3642 patients. The SF-36 is a self-reported questionnaire, a reduced version of the Medical Outcomes Trust questionnaire, translated into Portuguese and validated. The SF-36 assesses the following domains: physical functioning; physical role; bodily pain; general health perceptions; vitality; social functioning; emotional role; and mental health. Scores ranging from zero to 100, corresponding to the worst and best QoL, respectively, are attributed to each domain assessed.

The BRAZPD applied the SF-36 for QoL assessment at the following times: 1) six months after beginning PD for incident patients; 2) three months after entering the study for prevalent patients.

Physucuans and nurses performed the data collection. The present study assessed the most affected QoL domains at the beginning of dialysis for incident patients by assessing two subgroups: the elderly and the diabetic patients.

The nurses entered the following data of this clinical study: age; race; educational level; mean monthly income (in classes of minimum wages, according to the Brazilian Institute of Geography and Statistics);[9] and distance between the patient's residence and dialysis center (kilometers).[10] The physicians entered the following data: 1) CKD etiology (based on the classification of the European Dialysis and Transplant Association – EDTA); 2) pre-dialysis care (in case of follow-up, time in years and months); 3) instructions about the RRT types to patients; 4) indication for PD (patient's option, medical indication, or the only possible therapy); 5) specialty of the professional who referred the patient; 6) presence and type of vascular access; 7) dialysis history, including the current and previous RRT and the time spent in each therapy.[10]

Assessment of comorbidities was based on the score criterion used by Davies *et al*.[11] Previous data about infection included all infections (peritonitis, catheter exit site, and catheter subcutaneous tunnel) occurring before the patient entered the study.

The project was approved by the National Committee on Ethics and Human Research under the number 448. Patients participating in the study provided written informed consent.

Statistical analysis

Statistical descriptive analysis was performed. Then, the elderly *versus* non-elderly and diabetic *versus* non-diabetic populations were compared in the eight SF-36 domains and with the Karnofsky index, by using the Student *t* test for independent samples or Mann Whitney with the Bonferroni test. The significance level of $p \leq 0.05$ was adopted. The software SPSS 13.0 was used for data analysis.

Results

The total population comprised 6,198 patients, and 1,624 incident patients (on PD for more than three months), who had all data required, were assessed.

Table 1 shows the social and demographic data of the population assessed. Mean age was 57.8 ± 15.3 years, 47% of the patients were elderly (over the age of 60 years), 55.2% were of the female sex, and 60% were white. Regarding educational level, 10.3% were illiterate, 56.4% had elementary school education, 25.5% had middle school education, and 7.8% had college education.

Regarding income, 36.9% of the patients received up to two minimum wages, 41.7% received from two to five minimum wages, 17% from five to ten minimum wages, 3.8% received from ten to 20 minimum wages, and 0.7% received more than 20 minimum wages. Most participants in the study (58.2%) lived within 25 km from the dialysis center.

Table 1 Social and demographic data

Variables	Mean ± Standart deviation / % (n = 1.624)
Age	57.8 ± 15.3
Elderly (over 60 years of age)	47%
Female sex	55.2%
White race	60%
Educational level:	
Illiterate	10.3%
Elementary school	56.4%
Middle school	25.5%
College	7.8%
Income	
Up to 2 minimum wages	36.9%
From 2 to 5 minimum wages	41.7%
From 5 to 10 minimum wages	17%
More than 20 minimum wages	0.7%
Distant up to 25 km	58.2%

Table 2 shows the clinical characteristics of the sample. The etiology of the disease was as follows: diabetic nephropathy, 36.9% of the patients; hypertensive nephrosclerosis, 22.7%; chronic glomerulonephritis, 11%; undetermined etiology, 14%; and others, 15.4%.

Of the patients assessed, 55.7% had been followed up prior to dialysis.

The comorbidities were as follows: systemic hypertension, 90.3%; left ventricular hypertrophy (LVH), 44%; diabetes, 40%; peripheral vascular disease, 25.6%; heart failure, 25%; neoplasias, 2.6%; and collagenosis, 2.4%. Only 2.2% of the patients had no comorbidities.

The QoL assessment by use of the Karnofsky index is shown in percentiles in Figure 2. Most patients had high scores of QoL as follows: 75% had QoL scores greater than 90, and 50% had QoL scores greater than 70.

The QoL assessment by use of the SF-36 showed low scores of QoL in all domains, "physical role" and "mental health" being the most impaired. The "social functioning" domain had the highest score (Figure 3).

When comparing the subgroups, the elderly and the diabetic patients scored lower than non-elderly and non-diabetic by using the Karnosfsky index (Table 3) and the SF-36 (Tables 4 and 5).

Table 2 Clinical characteristics

Variables	% (n = 1,624)
Etiology of CKD	
Diabetic nephropathy	36.9
Hypertensive nephrosclerosis	22.7
Chronic glomerulonephritis	11
Undetermined etiology	14
Others	15.4
Pre-dialysis follow-up	55.7
Comorbidades	
Systemic arterial hypertension	90.3
LHV	44
Diabetes	40
Peripheral vascular disease	25.6
Heart failure	25
Neoplasias	2.6
Collagenosis	2.4
No comorbidities	2.2

CKD: Chronic Kidney Disease; LHV: Left Ventricular Hypertrophy

Figure 2. General quality of life assessed by use of the Karnofsky index (n = 1,624).

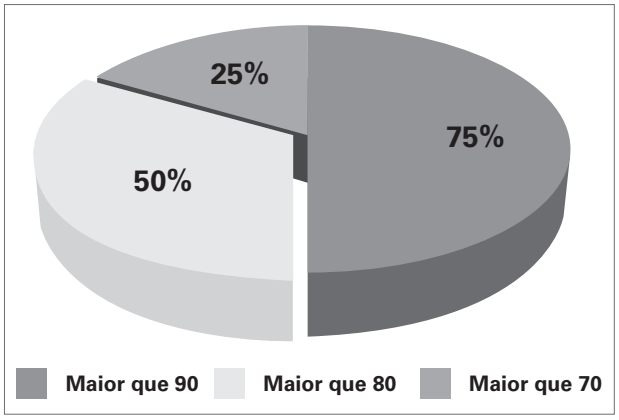
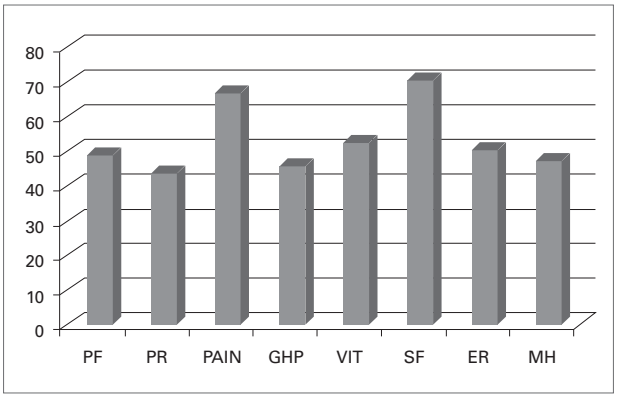


Figure 3. General quality of life assessed by use of SF-36 (n = 1,624).



PF: physical functioning; PR: physical role; GHP: general health perception; SF: social functioning; ER: emotional role; MH: mental health.

Discussion

Patients with CKD show a significant reduction in their QoL when compared with the general population, and an association exists between kidney function and the scores used to assess well-being and QoL.[12] One factor that could contribute effectively to improve the QoL of patients with CKD would be a reduction in the number of comorbidities.[2]

The present study assessed the QoL of patients undergoing PD, in which elderly and diabetic patients prevailed. Such patients usually have greater physical, psychic, and social impairments.

In this study, the general assessment of QoL differed according to the instrument used. By use of the Karnofsky index, in which the QoL assessment is performed by a health professional, the patients showed a satisfactory QoL. On the other hand, when the self-reported SF-36 was used, the QoL scores were reduced, specially the "physical role" and "emotional role" domains. These results indicate that the vision of the health team about the QoL of their patients may be different from the patients' own perception of their health state. However, when assessing the elderly and diabetic subgroups, no difference was observed between the results obtained by use of the two instruments. The elderly and diabetic patients maintained the worst performance, with the bias of the Karnofsky index showing better scores. Thus, it is worth emphasizing the importance of listening to the patient in regard to his/her process

Table 3 Quality of life assessment in the elderly and diabetic patients (Karnofsky index) (n = 1,624)

Population	Quality of life	p
Non-diabetic	84.01 ± 13.4	< 0.0001
Diabetic	76.12 ± 15.01	
Non-elderly	89.98 ± 13.26	< 0.0001
Elderly	75.88 ± 14.65	

Table 4 Quality of life assessment in elderly and non-elderly patients (SF-36) (n = 1,624)

Domains	Mean ± standard deviation	p
Physical functioning		
Non-elderly	60.52 ± 28.27	< 0.0001
Elderly	34.63 ± 28.19	
Physical role		
Non-elderly	50.15 ± 44.46	< 0.0001
Elderly	35.78 ± 42.42	
General health		
Non-elderly	48.82 ± 20.50	< 0.0001
Elderly	43.61 ± 21.11	
Vitality		
Non-elderly	57.91 ± 20.97	< 0.0001
Elderly	46.14 ± 22.65	
Social functioning		
Non-elderly	76.53 ± 26.73	< 0.0001
Elderly	63.44 ± 31.06	
Emotional role		
Non-elderly	56.53 ± 44.50	< 0.0001
Elderly	43.20 ± 45.58	
Mental health		
Non-elderly	49.80 ± 16.24	< 0.0001
Elderly	44.55 ± 17.79	

Table 5 Quality of life assessment in diabetic and non-diabetic patients (SF-36) (n = 1,624)

Domains	Mean ± standard deviation	p
Physical functioning		
Non-diabetic	55.26 ± 30.72	< 0.0001
Diabetic	39.86 ± 29.13	
Physical role		
Non-diabetic	48.64 ± 44.62	< 0.0001
Diabetic	36.59 ± 42.43	
Bodily pain		
Non-diabetic	69.53 ± 24.79	< 0.0001
Diabetic	63.96 ± 24.87	
General health		
Non-diabetic	49.45 ± 21.57	< 0.0001
Diabetic	42.13 ± 19.11	
Vitality		
Non-diabetic	56.02 ± 21.64	< 0.0001
Diabetic	47.76 ± 22.86	
Social functioning		
Non-diabetic	74.50 ± 28.18	< 0.0001
Diabetic	65.15 ± 30.40	
Emotional role		
Non-diabetic	54.38 ± 45.16	< 0.0001
Diabetic	45.07 ± 45.35	
Mental health		
Non-diabetic	49.46 ± 16.80	< 0.0001
Diabetic	44.53 ± 17.21	

of treatment, limitations, and possibilities. Another point to be stressed is the fact that, although the Karnofsky index can be considered a QoL instrument[13], it assesses only physical performance. The concept of QoL involves not only physical, but also social, psychic, and spiritual well-being.[14] This is one of the limitations of the present study, because an instrument that assesses only physical performance was used as a parameter of QoL, ignoring the other parameters assessed by use of the SF-36.

The concept of QoL is defined as the individual's perception about his/her position in life, cultural context, system of values, objectives, expectations, patterns, and concerns. That concept involves aspects such as subjectivity, multiple dimensions, and presence of positive and negative dimensions.[14] Therefore, that is a multifactorial and subjective concept, and, thus, important to be assessed by the own individual.

In the assessment by use of SF-36, the "physical role" and "mental health" domains were the most impaired. Numerical assessments can sometimes measure subjective aspects, such as the impact that the disease and treatment may have. Such measurements allow the perception of the effect that dialysis may have on psychic and physical conditions of CKD patients. The chronicity of the disease in association with comorbidities and advanced age are factors that can significantly impact the patients' daily activities, social relations, and mental health.

The QoL assessments in the elderly group showed that they had a reduction in their QoL as compared with non-elderly. Such results are in accordance with those found in the literature, because age is a factor that can have a negative impact on the QoL indices. Kusztal *et al.* [15], studying CKD patients, have reported that the impact of aging was more evident on the physical domains of the SF-36. Similar results were found in a study of HD patients, which showed a negative correlation between age and the QoL domains, such as physical functioning, role limitation due to physical health, bodily pain, general health perceptions, vitality, and social functioning.[16] Castro *et al.* [17] have also reported a negative correlation between age and the following SF-36 domains in patients on HD: physical functioning; physical role; bodily pain; and vitality. The authors emphasize that the presence of chronic disease, need for continuous and long treatment, advanced age, and presence of comorbidities are factors that can interfere with the QoL of that population.

In our study, diabetic patients also had lower QoL than non-diabetic patients. In the SF-36 assessment, the "physical role" domain was the most impaired in diabetic and elderly patients. Similarly to those results, Mingardi *et al.*[18] have reported that, among dialysis patients assessed by use of the SF-36, diabetics also had significantly lower scores regarding physical role. The impact of aging was more evident in the physical domains. Barbosa *et al.* [19], studying HD patients, have reported that the presence of comorbidities, such as diabetes and peripheral vascular disease, in addition to more advanced age, were significantly associated with lower scores in at least one of the SF-36 dimensions.

The results of the present study emphasize the influence of factors, such as, advanced age and diabetes, in the reduction of the QoL parameters of patients undergoing PD.

Conclusion

In this multicenter prospective cohort study, using data from the BRAZPD, elderly and diabetic patients predominate, suggesting the existence of a bias of negative selection for PD in our country.

The self-assessment by use of SF-36 revealed a low QoL of the patients, "physical role" being the most impaired domain. The elderly and the diabetic patients showed the worst QoL, emphasizing their need for special attention. The Karnofsky index did not show good compatibility with the SF-36 results in the general analysis of QoL. In face of these findings, it is worth emphasizing the importance of valuing the patient's perception about his/her own health state.

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