

Assessment of knowledge toward periodontal disease among a sample of nephrologists and nurses who work with chronic kidney disease not yet on dialysis

Avaliação do conhecimento sobre doença periodontal em uma amostra de nefrologistas e enfermeiros que atuam com doença renal crônica pré-dialítica.

Authors

Jessica do Amaral Bastos¹
Eduardo Machado Vilela²
Mirelle Nery Henrique²
Patrícia de Castro Daibert²
Ludmila Féo Machado de Carvalho Fernandes³
Diana Albuquerque Alvim de Paula⁴
Maria das Graças Afonso Miranda Chaves⁵
Marcus Gomes Bastos⁶

¹Núcleo Interdisciplinar de Estudos, Pesquisas e Tratamento em Nefrologia – NIEPEN.

²Faculdade de Odontologia da Universidade Federal de Juiz de Fora – UFJF.

³Faculdade de Educação Física da UFJF.

⁴Faculdade de Enfermagem da UFJF.

⁵Departamento de Clínicas Odontológicas da Faculdade de Odontologia da UFJF.

⁶Universidade Federal de São Paulo – UNIFESP; NIEPEN.

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Correspondence to:

Jessica do Amaral Bastos
Rua José Lourenço Kelmer,
1.300 – São Pedro
Juiz de Fora – MG – Brasil
Zip code 36036-330
E-mail: jessicabastos7@gmail.com

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ABSTRACT

Introduction: Recent studies have identified periodontal disease (PD) as a risk factor for chronic kidney disease (CKD). The aim of this study was to assess the general knowledge about, attitudes toward, and behaviors/practices concerning PD among physicians and nurses who work with CKD patients. **Methods:** An 8-question questionnaire was distributed to participants of the XXV Brazilian Congress of Nephrology (2010) and the Minas Gerais Nephrology Congress (2011). The questions covered the following aspects of PD: epidemiology, clinical presentation, predisposing factors, systemic expression, inclusion of oral examination during routine physical examination, and the frequency of referral for dental treatment. **Results:** Most physicians and nurses interviewed correctly answered the questions on general knowledge about PD. 42.2% of the physicians and 38% of the nurses did not routinely examine the oral cavity of their patients. Most patients seen by nephrologists (59.4%) and nurses (61.5%) were referred to dental care in less than 30% of the consultations. **Conclusion:** Nephrologists and nurses demonstrated good self-reported general knowledge about PD, albeit with limited clinical experience, as evidenced by the low rates of examination of the oral cavity and referral for specialist treatment. These findings suggest the need of theoretical and practical training in oral health at both, undergraduate (medicine and nursing) and postgraduate levels (medical and multi-professional residency programs). **Keywords:** Periapical Abscess. Nephrology. Community Health Nursing. Renal Insufficiency, Chronic.

RESUMO

Introdução: estudos recentes apontam a doença periodontal (DP) como fator de risco para doença renal crônica (DRC). O objetivo do presente estudo foi avaliar o grau de conhecimento, atitude e prática de médicos e enfermeiros que atuam na nefrologia relativos à DP. **Métodos:** um questionário foi aplicado a médicos e a enfermeiros participantes do XXV Congresso Brasileiro de Nefrologia (2010) e IX Congresso Mineiro de Nefrologia (2011), abrangendo os seguintes aspectos da DP: epidemiologia, apresentação clínica, fatores predisponentes, repercussão sistêmica, a inclusão do exame da cavidade bucal no exame clínico dos pacientes com DRC e a frequência de encaminhamento para o dentista. **Resultados:** a maioria dos médicos e enfermeiros responderam corretamente às perguntas que abordaram os conhecimentos gerais sobre a DP. À pergunta referente à inclusão do exame da cavidade bucal no exame físico do paciente, 42,2% dos médicos e 38% dos enfermeiros responderam não fazê-la ($p > 0,05$). Contudo, a maioria dos pacientes vistos por nefrologistas (59,4%) e enfermeiros (61,8%) são encaminhados ao dentista em menos de 30% das consultas ($p > 0,05$). **Conclusão:** A amostra de nefrologistas e de profissionais de enfermagem participantes do estudo demonstrou conhecimento autorrelatado sobre DP considerado bom, embora com prática clínica limitada, expressada pelo baixo percentual de encaminhamento para tratamento especializado da doença. Os achados sinalizam para a necessidade da instituição de treinamento teórico-prático em saúde bucal nos cursos de graduação (medicina e enfermagem) e pós-graduação (residência médica e multiprofissional). **Palavras-chave:** Abscesso Periapical. Nefrologia. Enfermagem em Saúde Comunitária. Insuficiência Renal Crônica.

INTRODUCTION

Periodontal disease (PD) is a chronic, infectious, inflammatory condition which involves accumulation of bacterial dental plaque and genetic and environmental factors to cause impairment of the tooth-supporting tissues.¹ PD affects around 79 % of the Brazilian population.² Although PD has been classically associated with atherosclerosis, cardiac disease and stroke,¹ recent studies have pointed to a clinical role of PD in diabetes,² respiratory diseases,³ Alzheimer's disease¹ and, more recently, chronic kidney disease (CKD).⁴

PD and other manifestations of poor oral care, which are frequent in CKD patients, may lead to a systemic increase of markers of inflammation and atherosclerotic complications, thus potentially contributing to the higher morbidity and mortality rates observed in CKD.⁵

An individual with poor oral health may develop more serious clinical problems in the course of CKD. This may be due to the patients' older age, the occurrence of common co-morbidities such as diabetes mellitus, the frequent need of multiple drugs and a status of immune dysfunction.^{6,7} Neglected oral health may then be an important and overlooked clinical problem.

Several epidemiologic studies have shed light on the CKD/PD association.^{4,8-11} PD increases cardiovascular disease (CVD) – related mortality of stage 5 CKD patients on dialysis by a factor of 5, even after other important confounders are considered.¹² CKD patients have more severe PD compared with the PD of patients without a systemic disease.¹³

Compared to individuals without systemic diseases and PD, CKD patients have higher levels of traditional systemic inflammatory markers (IL-6 and C-reactive protein) and of pro-hepcidin (the pro-hormone form of hepcidin, the main regulator of iron homeostasis),¹⁴ which, along with parameters of clinical severity, level of clinical insertion and probing depth, decrease after PD treatment.

In general, the assessment of CKD patients does not include the clinical investigation of the oral cavity, in spite of studies pointing to the high prevalence of PD, greater severity and possible deleterious role in the course of CKD.¹⁵ This attitude precludes the provision of necessary information and counseling. It is important to warn the patient about some aspects of PD and its possible role in systemic diseases (CKD among them), chiefly during the provision of any form of health care.

To date, some studies^{16,17} have assessed the physician's role in the identification, discussion and prevention of oral diseases, although with a focus on pediatric populations and none specifically targeting CKD. In this context, this study aimed to assess the knowledge about, attitude toward and practice concerning PD among physicians and nurses caring for pre-dialysis CKD patients.

METHODS

During the XXV Brazilian Nephrology Congress, which happened in Vitória - ES, during 11-15 September, 2010, and the IX Minas Gerais Nephrology Congress, which happened in Ouro Preto – MG, during 4-7 May, 2011, a questionnaire was applied to voluntary participants who signed their informed consent and answered the questions anonymously.

The questionnaire included data on age, sex and profession, along with six true/false statements concerning general information about PD, as follows: 1) In Brazil, around 79% of the population have PD;² 2) Bleeding and gingival recession, dental mobility and early tooth loss are signs of PD;¹⁸ 3) Poor oral hygiene may increase the risk of CVD;¹⁸ 4) PD is a local infectious process with systemic repercussions (increased serum PCR);¹⁹ 5) PD treatment does not contribute to improved glycemic control (HbA1c) in diabetics;^{20,21} 6) Recent studies suggest that PD is a traditional risk factor for CKD.⁸

Two additional questions, concerning the rates of inclusion of the oral cavity examination in the clinical assessment of CKD patients and of referral to dental care, were made.

The analyses were made with the SPSS (version 13.0) software. The results were expressed as percentages of the total. The chi-squared test was used to compare the physicians' answers with the nurses' answers. Statistical significance was set at $p < 0.05$.

RESULTS

153 questionnaires applied in the two events were answered by 103 (67.3%) nephrologists and 50 (32.7%) nurses who cared for renal disease patients. The interviewees' mean age was 37 ± 10 years, with a predominance of the female sex among both, physicians (66%) and nurses (92%).

Most of the interviewees gave correct answers to the questions on PD epidemiology, PD clinical characteristics, origin of PD and relationship between PD and systemic conditions (cardiovascular disease and

glycemic control). Most participants, however, gave a wrong answer to question 6, on PD as a traditional risk factor for CKD (Table 1).

When questioned on the inclusion of examination of the oral cavity in the physical examination of CKD patients, most physicians (57.8%) and nurses (62%) answered affirmatively ($p > 0.05$) (Figure 1). Yet, most patients seen by nephrologists (59.4%) and nurses (61.8 %) are referred to the dentist in less than 30% of the consultations ($p > 0.05$) (Figure 2).

DISCUSSION

The results show that although nephrologists and nurses who care for renal disease patients have good knowledge about PD and include the assessment of the oral cavity in the physical examination of their patients, referral to dental treatment is inadequate.

Increases serum levels of inflammatory biomarkers, such as CRP and IL-6, in CKD patients, have been suggested as risk factors for renal disease⁹ and also for cardiovascular diseases, chiefly atherosclerosis.⁵ The two main causes of CKD, diabetes and hypertension, frequently lead to low-grade inflammation.^{6,7} Additionally, dyslipidemia also contributes to inflammation, being associated with atherosclerosis and CKD. Chronic PD, a bacterial infection of the tooth-

supporting tissues, and which is found in the subgingival plaque, may lead to increased CRP and IL-6 serum levels, which decrease, along with clinical markers of the disease, after treatment.^{14,19,22} Therefore, chronic PD also contributes to this low-grade inflammation, with exposure to oxidative stress, through increased levels of oxygen-reactive species and decreased

Figure 1. Frequency of inclusion of the examination of the oral cavity in the clinical examination of chronic kidney disease (CKD) patients, performed by nephrologists and nurses ($p > 0.05$).

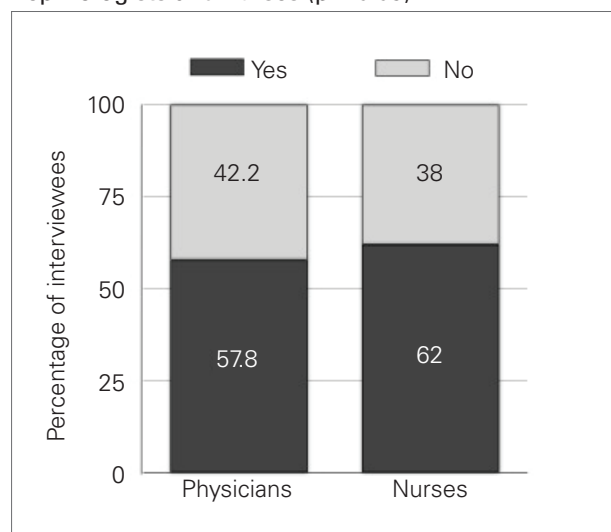
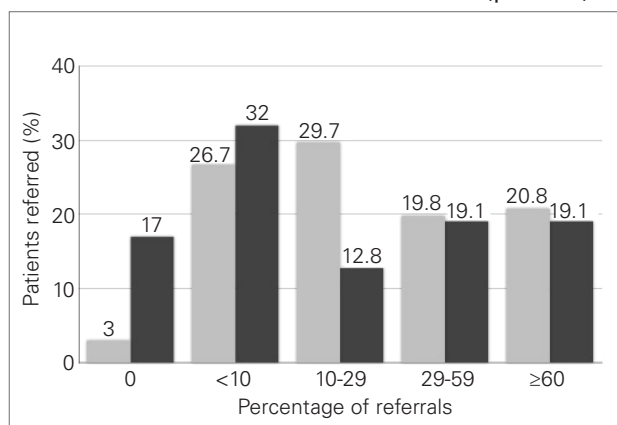


Table 1 FREQUENCY OF CORRECT ANSWERS AMONG NEPHROLOGISTS AND NURSES

Questions	Physicians (n= 103)	Nurses (n= 50)	p value
1. More than 79% of the Brazilian population has periodontal disease	True 79 (76.7%)	True 32 (65.3%)	0.025
2. Gingival bleeding and recession, dental mobility and early tooth loss are signs of periodontal disease	True 102 (99%)	True 49 (98%)	0.4
3. Poor oral hygiene may increase the risk of cardiovascular diseases	True 98 (95.1%)	True 45 (91.8%)	0.2
4. Periodontal disease is a local infectious process with systemic repercussions (increased serum C-reactive protein)	True 85 (82.5%)	True 34 (72.3%)	0.2
5. Treatment of periodontal disease does not contribute to better glycemic control (HbA1c) of diabetics	False 89 (87.3%)	False 37 (78.7%)	0.07
6. Recent studies have suggested that periodontal disease is a traditional risk factor for chronic renal disease	False 16 (15.8%)	False 12 (25%)	0.3

Figure 2. Most patients seen by nephrologists (grey bars) and nurses (black bars) are referred to dental care in less than 30% of the consultations ($p \geq 0.05$).



levels of antioxidants,²³ possibly contributing to CKD progression.^{11,24}

Our results are worrying. The high prevalence of PD in the general population,² its association with CKD,⁴ and the greater severity of PD in CKD patients¹³ all point to the importance of immediate referral of CKD patients with a diagnosis of PD to dental treatment, a practice that does not seem to be frequent among the professionals directly caring for these patients.

It has been proposed that physicians, chiefly family doctors, and other health professionals, should participate in programs of oral health promotion. One such example is the American program on Oral Cancer Alert, which recommends the active involvement of the medical community in oral health promotion and prevention. Examination of the oral cavity by nephrologists and other health professionals, with an emphasis on the early detection of PD, would be an appropriate strategy in Brazil, where access to routine dental care, especially of patients who depend on the national health system, is notoriously difficult.

In this study, approximately 42% of the nephrologists and 38% of the nurses did not routinely examine the oral cavity, thus hindering timely referral for PD treatment. The finding that most patients seen by nephrologists (59.4%) and nurses (61.8%) are referred to dental care in less than 30% of the consultations is worrying.

Because the study participants were sampled from scientific meetings which attract nephrology professionals from the whole country, thus indicating professionals with medical and nursing degrees from a range of teaching institutions, we suggest that the inadequacy of PD identification and

referral may be a national problem. Non-dentist health professionals clearly need practical and theoretical training in oral health, chiefly targeting the prevention and identification of PD. Training programs should be ideally offered during graduation and as part of post-graduation programs, particularly in nephrology and multiprofessional residency programs.

This study has limitations. Although it was conducted in two scientific events attracting a large number of participants, only a small percentage of nephrologists and nurses answered the questionnaire. As observed in other similar studies, self-reported attitudes and practices may be biased towards what the respondents consider to be ideal or socially expected. The study was conducted in a national and a regional event, without identification of the respondents' origin, thus limiting generalization of the findings to the whole country. Finally, there was no investigation of the duration of the professional activity, a variable that may interfere with the provision of oral health care.

CONCLUSION

The study sample, composed of nephrologists and nurses, showed good self-reported knowledge about PD, although with limited clinical practice, as expressed by the low rate of referral to specialist care. The findings point to the need of theoretical and practical training in oral health during graduation (medicine and nursing) and post-graduation (medical and multiprofessional residency programs).

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